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*DENTAL*  
MATERIA MEDICA  
AND  
THERAPEUTICS  
WITH  
PHARMACOPCEIA  
—  
*JAMES STOCKEN*





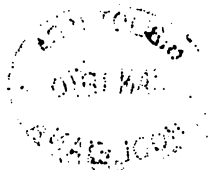


**Elements**  
**OF**  
**DENTAL MATERIA MEDICA**  
**AND**  
**THERAPEUTICS,**  
**WITH**  
**PHARMACOPŒIA.**

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ELEMENTS  
OF  
*DENTAL*  
MATERIA MEDICA  
AND  
THERAPEUTICS  
WITH  
PHARMACOPOEIA.



BY  
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LONDON:  
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—  
1877.

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TO  
*THE MEDICAL OFFICERS & LECTURERS*  
OF THE  
NATIONAL DENTAL HOSPITAL AND COLLEGE,  
THIS MANUAL IS DEDICATED  
AS A MARK OF SINCERE REGARD.

## PREFACE.

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THIS work is presented to the Dental Profession in the hope of supplying a long felt desideratum. There are elaborate works on general Materia Medica and Pharmacology, but none having special reference to Dentistry. This fact induced the Medical Staff of the National Dental Hospital to depute the Author to compile a manual for the use of the Hospital, and he undertook the task for that particular purpose. Subsequently, however, it was urged upon him to extend its scope with a view to publication.

Since its appearance in sections in *The Monthly Review of Dental Surgery*, the matter has been thoroughly revised, and several additions have been made.

The Author has received, and here desires gratefully to acknowledge, the valuable assistance so kindly proffered by his friends, Mr. Braithwaite and Mr. Gaddes.

He has also to acknowledge his obligations to the various writers whose works he has consulted.

40, Euston Square,  
Sept. 28, 1877.



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**ELEMENTS**  
**OF**  
**DENTAL MATERIA MEDICA**  
**AND**  
**THERAPEUTICS.**

---

By *materia medica* is understood that branch of medical science which treats of the substances (or medical materials) employed in the prevention and treatment of disease.

By *therapeutics* the science which teaches the use and effect of those substances.

All medical materials or remedies act either through the agency of the mind or directly on the body, and may be thus divided:—

1. Remedies acting through the mind.—

*a.* External.    *b.* Internal.

External.—Smell—taste—hearing  
vision—touch.

Internal.—Feeling—intellect—reasoning.

2. Physical Remedies (imponderable).

Light (vital stimulus).

Heat (vital stimulus).

Cold (depressant and sedative, diminishing vital action).

Electricity (stimulant to all senses).  
Magnetism.

3. Hygienic Remedies.—Food—climate—exercise.
4. Mechanical and Surgical Remedies.
5. Pharmacological Remedies.

Pharmacology or *materia medica* may be sub-divided into three departments:—

1. Pharmacognosy treats of the origin, properties, varieties, quality, and purity, of *unprepared* medicines or simples.
2. Pharmacy treats of the collection, preparation, preservation, and dispensing of medicines.
3. Pharmacodynamics and Therapeutics treat of the effects, uses, and administration of medicines in the cure of diseases.

General Pharmacology may be thus viewed:—

1. Modes of ascertaining effects of medicines.
2. Active forces of medicines.
3. Changes which medicines undergo in the organism.
4. Physiological effects of medicines.
5. Therapeutical effects of medicines.
6. Parts to which medicines are applied.
7. Classification of medicines.

Modes of ascertaining effects of medicines:—

1. The sensible qualities of medicines.
2. The natural-historical properties.

3. The chemical properties.
4. The dynamical properties.

Active forces of medicines.

1. Physical.
2. Chemical.
3. Dynamical.

Changes which medicines undergo in the organism. These changes are either physical, chemical, or both.

Physiological effects of medicines may be physico-vital, chemico-vital, or purely vital.

The circumstances modifying the effects of medicines, may either relate to the condition of the medicine or the organism.

As regards the medicine:—

1. State of aggregation.
2. Chemical combination.
3. Pharmaceutical mixture.

Relating to organism.—Age—sex—mode of life—occupation—habit—diseased condition of the body—climate—mind—race—temperament—idiosyncrasy—tissue or organ.

*Therapeutical effects of medicines.*—The effects produced on disease by the influence of medicines are denominated therapeutical, and are in their action direct or indirect.

There are three methods of employing medicine against disease, denominated:—

1. Antipathic—consists in employing medicines which produce effects of an opposite nature to the symptoms of the disease.
2. Homœopathic—employing medicines capable of producing effects similar to the one to be removed.

3. Allopathic or heteropathic—employing medicines which give rise to phenomena altogether different or foreign (neither similar nor exactly opposite) to those of the disease.

#### APPROXIMATE MEASUREMENT.

A teacup	...	...	4 ounces (fluid)
A wine glass	...	...	2 " "
A tablespoon of liquid	...	$\frac{1}{2}$	" "
A tablespoon of powder	...	2	drachms
A teaspoon of liquid	...	1	fluid drachm
A teaspoon of powder	...	About $\frac{1}{2}$	drchm.
A teaspoon of magnesia	...	About 12	grns.
One drop of water	...	1	minim
One drop of oils and tinct.	...	About $\frac{1}{2}$	minim
One drop of chloroform	...	About $\frac{1}{3}$	minim

#### TABLE OF THE NUMBER OF DROPS OF DIFFERENT LIQUIDS EQUIVALENT TO ONE FLUID DRACHM OF WATER :—

Acetum opii	...	...	90
Acid: acet: dil:	...	...	55
Acid: hydrocyanicum dil.	...	...	52
Acid: hydrochloricum dil.	...	...	54
Acid: nitric: dil.	...	...	62
Acid: sulph: dil.	...	...	54
Acid: sulph: arom.	...	...	116
Alcohol	...	...	118
Chloroformum	...	...	180
Ether sulphuricus	...	...	150
Glycerinum	...	...	55
Liq: ammon.	...	...	49

Liq: iodi. co. ...	...	...	75
Liq: potass. arsen.	...	...	60
Liq: arsen: et hyd: iod.	...	...	52
Ol: olivæ	...	...	76
Ol: crotonis	..	...	80
Spt: æth: nit.	...	...	90
Tinct: aconit. rad.	...	...	118
Tinct: ferri chlor.	...	...	132
Tinct: opii	...	...	120
Vin: opii	...	...	78

THE PULSATION PER MINUTE AT VARIOUS AGES.

At birth	...	...	130 to 150
One year	...	...	108 to 130
Seven years	...	...	72 to 90
Puberty	...	...	80 to 85
Adult age	...	...	70 to 75
Old age	...	...	50 to 65

RESPIRATION PER MINUTE AT VARIOUS AGES.

First year	...	...	35
Second year	...	...	25
At puberty	...	...	20
Adult age	...	...	18

DOSES OF MEDICINES FOR THE ADULT MALE ; FOR  
FEMALES THE DOSE IS SOMEWHAT LESS:—

Adult male	...	1 drachm or 1
Fourteen years	...	$\frac{1}{2}$ drachm or $\frac{1}{2}$
Seven	„	1 scruple or $\frac{1}{3}$
Five	„	minims or grains 15 or $\frac{1}{4}$
Three years	...	„ „ 10 or $\frac{1}{8}$
One	„	„ „ 6 or 1-10
Six months	...	„ „ 3 or 1-20
Three	„	„ „ 2 or 1-30

## ACIDUM CARBOLICUM.

## CARBOLIC ACID.

*Formula.*—Old:  $\text{HO}$ ,  $\text{C}_6\text{H}_5\text{O}$ . New:  $\text{HC}_6\text{H}_4\text{O}$ .

*Synonym.*—Phenic Acid. Phenyl Alcohol.

*Characters.*—In colourless acicular crystals, which at a temperature of  $95^\circ\text{F}$ . become an oily liquid, having a strong odour, and taste resembling creasote; sp. gr. 1.065; boiling point,  $370^\circ\text{F}$ . Does not redden litmus. The crystals readily absorb moisture from the air, and become liquid. Slightly soluble in water, freely so in alcohol, ether, and glycerine. It may be liquified by immersing the bottle containing it in hot water.

*Preparation.*—Obtained from coal-tar by fractional distillation and subsequent purification.

*Physiological Effects and Therapeutics.*—It is used for the same purposes, and in the same way as creasote. Its use in medicine, however, has principally been as an external application, to correct the foetor of gangrenous and other secreting surfaces, and to destroy septic germs.

It possesses stimulant, narcotic, irritant, styptic, antiseptic, and escharotic properties, uniting with albumen and gelatine, forming insoluble compounds.

It obtunds sensitive dentine, and relieves toothache arising from an exposed or nearly exposed pulp; when suppuration has set in, it arrests that process, inducing a healthy reaction without irritation, its application

being repeated so long as pus forms, but the treatment should not be continued if the eschar previously produced still remain attached.

In cases where the pulp is healthy, but exposed, it should be applied until the pulp is thoroughly blanched; the pulp should then be capped with a piece of bibulous paper saturated with the acid, and any excess mopped out with fresh bibulous paper or cotton. The cavity may then be filled partially (or entirely) with a temporary and completed with permanent stopping. It is a useful agent in the treatment of periostitis and alveolar abscess.

In different degrees of dilution it forms an invaluable antiseptic lotion in ulcerations of the mouth, &c.

## ACIDUM CHROMICUM.

### CHROMIC ACID.

*Formula.*—Old:  $\text{HOCrO}_3$ . New:  $\text{H}_2\text{CrO}_4$ .

*Characters.*—This acid occurs in the form of brilliant crimson-red crystals. It is deliquescent, and very soluble in water.

*Preparation.*—Obtained in crimson needles by the action of sulphuric acid upon a cold saturated solution of bichromate of potash.

*Properties and Uses.*—It is one of the most powerful escharotics known, and acts as a rapid destroyer of organic matter. It has been recommended for bleaching discoloured teeth, and to obtund sensitive dentine; but

its application produces so much pain, and it is so destructive to the tissues, that its use requires great skill and judgment not to do more mischief than good.

For morbid growths upon the gums, it is a valuable remedy if intelligently employed, and may be used deliquesced or diluted, according to the effect desired. It may be conveniently applied by means of a gold or platinum wire. Great care should be exercised to protect the healthy parts.

## ACIDUM GALLICUM.

### GALLIC ACID.

*Formula.*—Old :  $3\text{HO}, \text{C}_{14}\text{H}_3\text{O}_7, \times 2\text{HO}$ .

New :  $\text{C}_7\text{H}_5\text{O}_6$ .

*Characters.*—Slightly soluble in cold water, freely so in hot water or alcohol. Produces a deep, bluish-black colour with persalts of iron, in which it agrees with tannic acid; but unlike tannic acid does not precipitate solutions of gelatine, albumen, or the salts of the alkaloids.

*Preparation.*—The coarsely powdered galls are made into a paste with water, and exposed to the action of the air for six weeks, at a temperature between  $60^\circ$  and  $70^\circ\text{F}$ . The paste is then boiled with water, and filtered whilst hot; on cooling the acid is deposited, and may be purified by subsequent solution and crystallization.

*Physiological Effects and Therapeutics.*—Gallic acid acts principally as a remote astringent.

Dr. Todd says that in all cases of hemorrhage dependent on hemorrhagic tendency, he considers Gallic acid to be the best styptic we possess. In acute tonsillitis, in the form of gargle, great benefit is derived from its use.

## ACIDUM HYDROCHLORICUM.

### HYDROCHLORIC ACID.

*Synonyms.*—Muriatic acid, spirits of salts.

*Formula.*— $\text{H Cl}$ .

*Characters.*—A nearly colourless and strongly acid liquid, emitting white vapours, having a pungent odour. Sp. gr. 1.16.

*Preparation.*—Obtained by the distillation of a mixture of chloride of sodium, sulphuric acid, and water. The gaseous product, previously washed, is conducted into a receiver containing water until the density of the same has become 1.16.

*Physiological Effects and Therapeutics.*—It has been employed in ulcerated sore throat, in scrofulous and venereal affections; as a caustic in phagedœna, though inferior to nitric acid. Van Swieten employed it in cancrum oris. In a diluted form it has been spoken of in the highest terms as a gargle in diphtheria, in ulcerations of the throat and mouth, also as a tonic, refrigerent, and astringent.

*Uses.*—Its action upon the teeth being deleterious, its use should be followed by an alkaline mouth wash. Used in the laboratory as a "pickle," zinc and borax being dissolved by it.

*Dose.*—Of the diluted acid, 10 to 30 minims, largely diluted.

## ACIDUM NITRICUM.

### NITRIC ACID.

*Synonym.*—Aqua fortis.

*Formula.*—Old:  $\text{HO}, \text{NO}_3$ . New:  $\text{HNO}_3$ .

*Characters.*—A colourless liquid, which, when exposed to the air, emits an acrid corrosive vapour. Sp. gr. 1.42.

*Preparation.*—Prepared from nitrate of potash, or nitrate of soda, by distillation with sulphuric acid and water. It contains 70 per cent. by weight of nitric acid, or 60 per cent. of nitric anhydride.

*Physiological Effects and Therapeutics.*—In the concentrated form the acid is powerfully escharotic and corrosive, which property it derives in part from its affinity for water, but more especially from the facility with which it gives out oxygen. The permanent yellow stain which it communicates to the cuticle is peculiar to it, and this is illustrated in the condition of the tongue and pharynx in cases of poisoning, as represented by Dr. Roupell. Like sulphuric acid it chars the animal tissues. In sloughing phagedœna its application is attended with most successful results. Diluted it is an alterative, tonic, and refrigerent. It has been beneficially used in syphilitic diseases where mercury would have been useless or hurtful. In scrofulous subjects it may be given in conjunction with compound decoction

of sarsaparilla. Its action upon the teeth being deleterious, its use should be followed by an alkaline mouth wash. It is a most powerful escharotic, and has been used in cases of exposed and sensitive pulp, but its employment requires the greatest care, as its contact with the dentine causes its disintegration. Diluted (1 drachm to 1 or 2 pints of water) it is a good local application to sloughing and other ill-conditioned sores.

*Uses.*—It readily dissolves silver; it has no action upon gold; but when mixed with two parts of hydrochloric acid (forming aqua regia) a solvent for this metal is formed.

*Dose.*—Of the dilute acid, 10 to 30 minims, *largely diluted*.

## ACIDUM PHOSPHORICUM DILUTUM.

### DILUTE PHOSPHORIC ACID.

*Formula.*—Old:  $3\text{HO}, \text{PO}_5$ . New:  $\text{H}_3\text{PO}_4$ .

*Characters.*—A colourless liquid, with a sour taste, and strongly acid reaction. Sp. Gr. 1.08.

*Preparation.*—Diluted nitric acid and phosphorus, treated together in a flask, with a large funnel in the mouth of it, containing a smaller one inverted, to condense the nitric acid; the phosphorus is oxydised at the expense of the nitric acid. Phosphorous and phosphoric acid are produced, while nitric oxide is evolved. By concentrating the distillate the phosphorous acid is converted into

phosphoric acid by the free nitric acid present. The excess of nitric acid is driven off by evaporation. It is afterwards diluted to bring it to the required strength.

*Physiological Effects and Therapeutics.*—It is sometimes given in affections of the nervous system. In scrofula it is said to exercise a very beneficial effect in a large number of cases; and as a therapeutic agent, it will be found in no degree inferior to iodine, cod-liver oil, or barium.

The benefit to be derived from the use of the phosphatic salts are noticed elsewhere.

## ACIDUM TANNICUM.

### TANNIC ACID.

*Formula.*—Old:  $C_{34}H_{22}O_{34}$ . New:  $C_{27}H_{22}O_{17}$ .

*Characters.*—In pale yellow vesicular masses, or thin glistening scales, with a strongly astringent taste and an acid reaction; readily soluble in water and rectified spirit, very sparingly soluble in ether. It forms a dense white precipitate with lime water; an aqueous solution becomes a bluish-black colour upon the addition of the persalts of iron; and with a solution of gelatine a yellowish-white precipitate is thrown down. It is entirely volatilized by heat.

*Preparation.*—Powdered galls are exposed to a damp atmosphere for two or three days, and then sufficient ether is added to form a soft paste, this is allowed to stand for twenty-four hours in a clean vessel. It is then submitted to pressure as quickly as pos-

sible, and the pressed cake is again treated with ether to which 1-16th of its bulk of water has been added; this is allowed to stand as before, and is again pressed. The expressed liquids are now mixed, and, in the first place, allowed to evaporate spontaneously; then by the aid of a little heat, reduced to a syrupy consistence, and lastly dried on plates in a hot air chamber at a temperature not exceeding 212° F.

*Physiological Effects and Therapeutics.*—Tannic acid is the most powerful of all the vegetable astringents or styptics. As a topical astringent it is far more powerful than gallic acid, because its action on albumen, gelatine, and fibrin is energetic, while gallic acid exerts no action on these principles.

Tannic acid is used as an astringent chiefly in hemorrhages and profuse secretions. Its remote action is probably due to its conversion into gallic acid in its passage through the system. Applied to spongy gums, it causes contraction of the vessels, and furthermore checks their tendency to absorption and consequent loosening of the teeth. It is a useful application to abrasions or sores caused by artificial dentures.

In the form of lozenge it is very beneficial to relaxed uvula and tonsils or sore throat.

As an injection (1 to 5 grains in 1 oz. of water) in some forms of disease of the antrum it has been found serviceable.

A strong solution in alcohol is useful when

applied to sensitive and soft dentine. It is taken as a snuff in relaxed and diseased conditions of the mucous membrane of the nose.

## ACONITUM NAPELLUS.

### ACONITE.—COMMON MONKSHOOD.

*Botany.*—A perennial plant belonging to the Natural Order *Ranunculaceæ*. The Crowfoot or buttercup order. It has been found by the side of rivers and streams in Herefordshire and Somersetshire; but is not considered to be strictly indigenous. It is cultivated for the sake of its leaves and flowering tops, from which an extract is made. The roots, which are employed for making the liniment and tincture, and for extracting the alkaloid, are imported from Germany, should be collected in the winter or early spring.

*Chemistry.*—It contains an alkaloid, *aconitia* or *aconitine*, upon which the activity of the drug depends. This exists in the plant, more particularly in the root, in combination with aconitic acid.

*Physiological Effects and Therapeutics.*—This drug is a cerebro-spinant, producing numbness and tingling of the parts about the mouth and throat, and of the extremities; vomiting, contracted pupil, and failure of the circulation.

A benumbment is obviously the physiological remedy for increased sensibility of the nerves, therefore, in neuralgia and rheumatism it is most serviceable—in neuralgia no remedy is found equal to it. Pereira says:—"When

the disease depends on inflammation it is not of much avail. In a painful affection of the nerves of the face arising from inflammation of the periosteum of a tooth, it gives no relief, but seems to limit and cut short the intensity of most acute inflammations if given sufficiently early, and in repeated small doses." Notwithstanding, combined with iodine, it is a common local remedy for periostitis.

It is supposed to act by paralysing the nerves of the part, thus destroying the incitement to the local afflux of blood, favouring resolution, and limiting the size of the abscess where pus is already formed. A drop or two on cotton-wool, introduced into the socket of a tooth after extraction, will give immediate relief. It is a potent dressing in the canals of teeth as a preventive to periodic irritation, and is sometimes a useful application to an inflamed pulp. Care should be taken not to apply an excess.

*Dose.*—From 5 to 10 drops of the tincture of the British Pharmacopoea, which is one-sixth the strength of Flemming's Tincture.

*Antidote.*—See poison Table.

## ÆTHER.

### OXYDE OF ETHYL.

*Synonyms.*—Ether, Sulphuric Ether.

*Formula.*—Old:  $C_2H_5O$ . New:  $(C_2H_5)_2O$ .

*Chemistry.*—Though formerly termed sulphuric ether, it contains no sulphuric acid.

*Characters.*—It is a colourless, very volatile and inflammable liquid, having a strong and peculiar odour, boiling below 105°F., having a specific gravity of 0.735, and containing 92 per cent. of pure ether. Fifty measures agitated with an equal volume of water are reduced to 45 by an absorption of 10 per cent. It possesses neither acid nor alkaline properties, but by exposure to air and light it absorbs oxygen, by which acetic acid and oxygen are produced. Soluble in 10 parts of water. Alcohol dissolves it in all proportions. Volatile oils, fatty and resinous substances, some of the alkaloids, caoutchouc, and gum cotton (forming collodion) are soluble in ether.

*Preparation.*—Obtained by distilling a mixture of rectified spirits of wine and sulphuric acid, agitating the distillate with chloride of calcium and slacked lime, and re-distilling. *Pure Ether* is prepared by washing the above with water to remove any spirit, decanting the supernatant ether and digesting it with recently burned lime and chloride of calcium, and lastly, re-distilling.

*Physiological Effects and Therapeutics.*—Pure ether is more suitable for medicinal purposes. It is principally valuable as a speedy and powerful agent in spasmodic and painful affections which are not dependent on local vascular excitement. In asphyxia it has been used with benefit. Local anæsthesia is fre-

quently produced by means of ether applied in the form of spray, producing insensibility by the intense cold caused by its rapid evaporation. It has been successfully used in this way in performing minor operations, such as the extraction of a tooth, the opening of an abscess, and the removal of small tumours.

The vapour of ether, either alone or with chloroform, or nitrous oxide, is also used as a general anæsthetic in the extraction of teeth, and in spasmodic diseases of the respiratory organs.

The usual effects produced by ether are relaxation and loss of power over the voluntary muscles, insensibility to pain, and profound coma.

The *rationale* of the action of ether is generally admitted to be paralysis of the sympathetic system, inducing rapidity of circulation, paralysis of the sensory and motor systems following. It is less persistent in its narcotic influence than chloroform, but not so dangerous.

“Notwithstanding many assurances to the contrary, it must be apparent that a condition so closely resembling death cannot be produced by any agent whatever without great risk of life; where morbid conditions of the heart, lungs, or brain exist, or when the administration is carelessly performed, or the administrator is ignorant of physiology, unable to estimate the life-power of his patient, and to read intelligently the successive steps of the unnatural condition which he is pro-

ducing, and unless he can read these manifestations as he would an open book, he should not venture upon the experiment. A knowledge, too, of the most appropriate remedies and treatment, when signs of danger appear, and having those remedies within instant reach, are absolutely essential; nor can the great importance of employing a perfectly pure article be overrated."—WHITE.

*Antidote.*—*Vide* Chloroform.

## A L C O H O L.

### ALCOHOL.

*Formula.*—Old:  $C_2H_5O_2$ . New:  $C_2H_5O$ .

*Characters.*—A colourless, limpid liquid, and free from empyreumatic odour, entirely volatilized by heat, and not rendered turbid by admixture with water. Sp. gr. 0.795. When placed in contact with anhydrous sulphate of copper it does not give rise to any blue colour, thus showing the absence of water.

*Preparation.*—Prepared by the distillation of a mixture of rectified spirits of wine with carbonate of potash and slacked lime.

A spirit much stronger than the Pharmacopœia rectified spirit, but not so strong as alcohol; may be obtained extemporaneously by adding carbonate of potash to rectified spirit, allowing them to remain a few days, occasionally agitating.

*Physiological Effects and Therapeutics.*—As a styptic, it restrains hemorrhage from weak and relaxed parts; coagulates the blood by

its influence on the liquid albumen, and causes the contraction of the mouths of the bleeding vessels by its astringent qualities.

To whatever part it is applied it gives rise to contraction and condensation of the tissues. The affinity it has for water causes it to abstract the latter from the soft living tissues with which it comes in contact, and when these are of an albuminous nature, it coagulates the liquid albumen and causes increased density and firmness, hence it is very serviceable in cases of softened and sensitive dentine.

It is also the best agent to use for thoroughly drying the cavities of teeth before plugging.

## ALUMEN.

### ALUM.

*Formula.*—Old:  $\text{NH}_4\text{O}^+\text{TO}_3\text{Al}_2\text{O}_3\text{SO}_4 \times 12 \text{H}_2\text{O}$ . New:  $\text{NH}_4\text{Al}_2(\text{SO}_4)_3 \cdot 12\text{H}_2\text{O}$ .

*History.*—Found native in the neighbourhood of volcanoes, and constitutes the mineral called native alum, from which may be obtained the metal aluminium. The alum of commerce is now generally made with ammonia, as its formula indicates. Roche alum usually consists of crystalline fragments of alum coloured with Venetian red or Armenian bole.

*Preparation.*—In this country it is procured from aluminous slate, shale, or schist, a combination of aluminium with iron, sulphur, &c.

This is gently roasted, and then exposed to the air in a moistened state, oxygen is absorbed, the sulphur becomes acidified, and ferrous sulphate and sulphate of alumina are produced. The iron is removed by the addition of chloride of potassium or ammonium to the concentrated solution, according as the potassium or ammonium salt may be required; the alum is crystallized out, and purified by resolution and recrystallization.

*Characters.*—Alum occurs in colourless, transparent crystalline masses, exhibiting the form of the regular octahedron, and having a sweetish astringent taste.

*Alumen Exsiccatum* — *Dried Alum.*—It is simply the salt deprived of its water of crystallization.

*Physiological and Therapeutic Effects.*—It acts chemically on the animal tissues, forming insoluble compounds with albumen and gelatine. The immediate topical effect is that of an astringent, by virtue of which it checks or temporarily stops exhalation and secretion, produces paleness of the part by diminishing the diameter of the small blood vessels. Taken in large and repeated doses the astringency is soon followed by irritation, and the paleness by a preternatural redness, and thus it excites nausea, vomiting, griping, and purging.

As an emetic it produces less prostration than antimony or ipecacuanha. It forms a useful remedy, as a gargle, in relaxation of the throat, in congestion of the gums and

mucous membranes; as a styptic in hemorrhage, as a repellent in certain inflammations; and in lead colic, forming an innocuous sulphate; also a useful adjunct to tooth powders.

*Dose.*—From 5 to 40 grains.

## LIQUOR AMMONIÆ.

### SOLUTION OF AMMONIA.

Ammoniacal Gas,  $\text{NH}_3$ , dissolved in water.

*Characters.*—A colourless liquid, with a characteristic and very pungent odour, and strong alkaline reaction. Specific gravity, 0.959. It reddens turmeric paper, changes the colour of violet juice to green; but by exposure to the air, or the application of heat, both are restored to their original colour.

*Preparation.*—By heating a mixture of one part of powdered chloride of ammonium (hydrochlorate of ammonia) and two parts of dry quick lime in a glass retort; the washed ammoniacal gas is conveyed into a receiver containing water.

*Physiological Effects and Therapeutics.*—Its local action is at first rubefacient, then vesicant, and lastly caustic or corrosive. Its emanations are irritant. In syncope its effects are of an immediately restorative character; but it should be used cautiously. Internally, in small doses it acts as a diffusible stimulant or calefacient.

The effect of ammonia is principally manifested in the ganglionic and spinal systems, while camphor, wine, and opium, affect the

cerebral system; thus ammonia is adapted for speedily arousing the action of the vascular and respiratory systems, and for the prompt alleviation of spasm. More especially is this remedy indicated when our object is at the same time to promote the action of the skin.

The form in which ammonia is internally administered is usually the carbonate, or the aromatic spirit of ammonia.

*Dose.*—Of carbonate of ammonia, 3 to 5 grains in water; aromatic spirits of ammonia 10 to 60 drops in water.

## AMMONII CHLORIDUM.

### CHLORIDE OF AMMONIUM.

*Synonyms.*—Muriate of Ammonia, Hydrochlorate of Ammonia, Sal Ammoniac.

*Formula.*—Old:  $\text{NH}_4\text{HCl}$ . New:  $\text{NH}_4\text{Cl}$ .

*Characters.*—In colourless, inodorous, translucent, fibrous masses, tough and difficult to powder, soluble in water and in rectified spirit. It may be obtained in a fine state of division by dissolving the salt in boiling water to saturation, then setting the liquor aside to cool.

*Preparation.*—Formed by neutralising Hydrochloric Acid with Ammonia, and evaporating to dryness. Also by treating the impure ammoniacal liquor of gas works with Hydrochloric Acid; or by first treating the ammoniacal liquor with sulphuric acid, then mixing the resulting sulphate with common salt, and subliming.

*Physiological Effects and Therapeutics.*—A powerful alterative and stimulant to the absorbents. It restores secretions and exhalations which have been arrested by inflammation, and also improves their quality. It is useful in certain glandular affections, in chronic periostitis, rheumatism, and neuralgia. Externally, it is used as a discutient.

*Uses.*—It is used in the laboratory to “clean” zinc which has become unworkable.

*Dose.*—For internal use the dose is from 5 to 30 grains, every two to four hours. As a lotion, 1 ounce to 10 of water.

## AMYLUM TRITICI.

### WHEAT STARCH.

*Formula.*—Old:  $C_{12}H_{10}O_{10}$ . New:  $C_6H_{10}O_5$ .

*Botany.*—Obtained from *Triticum Vulgare*—Nat. Order *Graminaceæ*. The Grass order.

*Preparation.*—Coarsely ground wheat is steeped in water and allowed to ferment; the mass is then washed upon a sieve, the starch passing through is collected, well washed with water, and dried at a very gentle heat.

*Uses.*—It is a cooling application to external inflammations. In the form of decoction or infusion it is employed to thicken bandages for fractures of the jaw, &c.

The Glycerine of Starch is a valuable vehicle for the application of Aconite, Atropia, and other powerful agents.

## AMYL NITRIS.

### NITRITE OF AMYL.

*Formula.*—Old:  $C_{10}H_{11}O, NO_2$ .

New:  $C_5H_{11}NO_2$ .

*Characters.*—An ethereal liquid of a yellowish colour, and peculiar but not disagreeable odour. Sp. gr. 0·877. Boiling point  $205^\circ$ . Insoluble in water; soluble in rectified spirit in all proportions.

*Preparation.*—Produced by the action of nitric or nitrous acid on Amylic Alcohol.

*Dose.*—By inhalation, the vapour of 2 to 5 minims. To be used with caution.

## ANTHEMIS NOBILIS.

### COMMON CHAMOMILE.

*Botany.*—An indigenous plant belonging to the Natural Order, *Compositæ*.—The Composite order. The dried single and double flower heads are used; the former, however, are to be preferred (when they can be obtained genuine) as they contain the greatest quantity of volatile oil.

*Physiological Effects and Therapeutics.*—Tonic and stomachic. The warm infusion in large doses acts as an emetic; as a fomentation it is little better than hot water. Flannel bags filled with chamomile flowers, and soaked in hot water, are useful topical agents for the application of moist warmth, on account of their retention of heat.

## AQUA DISTILLATA.

## DISTILLED WATER.

*Formula.*—Old: HO. New:  $H_2O$ .

*Characters.*—Pure water may be regarded as a neutral body. It reacts neither as an acid nor as an alkali or basic body. This is not the case with ordinary water, therefore pure or distilled water ought always to be used for medicinal and scientific purposes.

*Preparation.*—Distillation, when properly conducted, is the most effectual method of purifying water.

## ARECA CATECHU.

## CATECHU, OR BETEL NUT PALM.

*Botany.*—The Betel nut tree belongs to the Natural Order, *Palmaceæ*.—The Palm order. Found in the south of India. Its seeds are known as Betel, Areca, and Pinang nuts.

*Properties and Uses.*—In its properties and uses it resembles the Catechu obtained from Acacia Catechu. Charcoal prepared from the Areca nut is termed Areca-nut charcoal, and is used in this country as a tooth powder. It is doubtful if it possess any value over that of ordinary charcoal.

The Betel nut is one of the ingredients in the famed masticatory of the East called *Betel*.

## ARGENTI NITRAS:

## NITRATE OF SILVER.

*Synonym.*—Lunar Caustic.

*Formula.*—Old:  $\text{AgO}$ ,  $\text{NO}_3$ . New:  $\text{AgNO}_3$ .

*Preparation.*—Prepared by dissolving silver in nitric acid and distilled water, evaporating the solution and setting aside to crystallize. The *stick* or *lunar caustic* is prepared by fusing the crystallised nitrate, and pouring into moulds. Light should be carefully excluded as it decomposes the salt.

*Physiological Effects and Therapeutics.*—The local action is that of a caustic or corrosive. Applied to the skin it produces at first a white mark, owing to its union with the albumen of the cuticle, this gradually becomes bluish-grey, purple, and ultimately black, owing to the partial reduction of the silver.

Repeated applications with moisture produce, after some hours, vesication, usually with less pain than that attendant on the use of cantharides.

It is sometimes employed as an internal remedy; but as it causes discolouration of the skin, which is generally permanent, it is rarely resorted to. As an external agent its uses are far more valuable. In inflammatory affections and ulcerations of the mucous membrane of the mouth and fauces, it is particularly so, in strength varying from 1 to 60 grains to a fluid ounce of distilled water.

It has also been used with advantage as an injection (1 to 5 grains to 1 ounce of

distilled water) in some abnormal conditions of the Maxillary sinuses, and in fistula.

As a styptic it is not so reliable as the preparations of iron or tannic acid, the coagulum which is formed being soluble in excess of albumen, while that formed by iron or tannic acid is not.

It has been suggested as an application to an exposed dental pulp, and to sensitive dentine, either in the solid form, or a saturated solution. It is used to obtund the sensitiveness of abraded teeth, but chloride of zinc in the solid form is far better, as it does not cause discolouration of the teeth.

Fused upon a platinum wire, it may be applied with greater facility and safety to the cavities of teeth or in awkward positions, where fracture of the stick caustic might be dangerous.

Recent stains of the cuticle may be removed by washing with a solution of common salt, followed by a solution of ammonia; and stains of long standing by wetting them with tincture of iodine, and subsequently with cyanide of potassium.

Should the pain produced by its external use be excessive, it can be allayed by washing the part with solution of common salt.

*Antidote.*—Solution of common salt, forming an insoluble chloride.

## ARNICA MONTANA.

### MOUNTAIN ARNICA.

*Synonym.*—Leopard's Banc.

*Botany.*—A plant belonging to the Natural Order *Composite*. The Composite order. Found in the meadows of the cooler parts of Europe, from the sea shore to the limits of perpetual snow; also in the northern parts of America and Asia. Beside the root, the dried flowers are employed in medicine, and are commonly preferred.

*Chemistry.*—The properties of arnica appear to depend upon an acrid resin, modified by a volatile oil and extractive. The best solvent is rectified spirit. According to Bastick it contains an alkaloid which he has named *Arnicina*.

*Physiological Effects and Therapeutics.*—Nervine, stimulant and diaphoretic. Externally, either in the form of tincture as a liniment, or diluted as a lotion. It is applied as a sedative and a resolvent to glandular swellings and rheumatism. To bruises, sprains, and lacerations it is extensively employed, and in most cases is very effectual. It is necessary to watch its effect when thus used, as a very troublesome eruption is apt to result when too long persevered in. (Dr. Fuller.) The tincture in conjunction with tannin-glycerine or tannic acid alone, is a most useful application to ulcers of the mouth caused by artificial dentures.

## ARSENICUM.

### ARSENIC.

*Formula.*—As.

*History.*—Occurs in the metallic state, and

in combination with sulphur and certain metals.

*Characters.*—It is hard, very brittle, crystalline, and of a steel-grey colour. When heated to dull redness, it volatilizes as a colourless vapour, having an alliaceous odour.

## ARSENIOUS OXIDE.

### ARSENIOUS OXIDE.

*Synonyms.*—Arsenious acid.—White arsenic.

*Formula.*—Old:  $\text{AsO}_3$ . New:  $\text{As}_2\text{O}_3$ .

*Characters.*—Heated with charcoal it forms metallic arsenic giving out an alliaceous odour. When mixed with zinc, and either sulphuric or hydrochloric acid, it evolves arseniuretted hydrogen gas (*Marsh's Test*), which has an alliaceous odour, and burns with a bluish-white flame, depositing a black spot of metallic arsenic on a cold plate held directly in the jet; and lastly, when boiled with hydrochloric acid and clean copper foil, it gives a grey metallic coating of arsenic to the latter (*Reinsch's Test*).

*Preparation.*—By roasting the ores of cobalt, tin and iron, the arsenious oxide vapours are condensed in a pulverulent form in the flues or condensing chambers. This rough oxide is refined by resublimation and forms the white arsenic of commerce.

*Physiological Effects and Therapeutics.*—Arsenious oxide is an antiperiodic, alterative, and antispasmodic; also an escharotic and antiseptic. Chronic affections of the nervous

and cutaneous systems are benefited by its use. In chorea, arsenious oxide is a remedy of established value. In cancrum oris and malignant ulcers of the tongue, its internal use is stated to be highly efficacious.

It is employed to devitalize the dental pulp, and also to obtund the pain of sensitive dentine. For this purpose it is usually combined with acetate of morphia and carbolic acid, in the form of paste; a small portion of which is introduced into the carious tooth and kept *in situ* by cotton and mastic or some other such agent. The quantity inserted should be about the twentieth or twenty-fourth part of a grain of arsenic, and it should be allowed to remain in the tooth from two to 36 hours, according to the effect desired to be produced.

## ATROPA BELLADONNA.

### DEADLY-NIGHTSHADE.

*Botany.*—This plant is a member of the Natural Order *Atropaceæ*. The Deadly-nightshade order. Indigenous in shady places on calcareous soils. It is also cultivated for the sake of its leaves and flowering tops, from which an extract and a tincture are made. The roots are imported from Germany, and are employed for making the liniment, and extracting the alkaloid.

*Chemistry.*—The alkaloid is termed *atropia* or *atropine*.

*Physiological Effects and Therapeutics.*—

Belladonna in the first degree, diminishes sensibility and irritability where these are morbidly increased, and, very frequently, causes dryness of the mouth and throat, with thirst. In the second degree of its operation, both in the healthy and morbid conditions, it has a remarkable influence over the cerebro-spinal system.

In comparing the operation of belladonna with that of other cerebro-spinants or narcotics, the most remarkable symptoms which attract our attention, are dilatation of the pupil with insensibility of the iris to the action of the light, disturbance of vision, giddiness, staggering, delirium, with phantasms followed by sopor, dryness of the throat, and difficulty of deglutition and articulation. Convulsions are rare, and when they occur, are slight. Lethargy or sopor occurs subsequently to the delirium. These characters distinguish the effects of belladonna from that of any other medicinal substance, except henbane and stramonium.

Belladonna has been applied to allay pain and nervous irritability, to lessen rigidity and spasmodic contraction of muscular fibres.

As an anodyne in most cases of internal pains, no remedy hitherto proposed is equal to opium, but this agent totally fails us in many of those external pains known as ticdouloureux and neuralgia. In such, belladonna occasionally succeeds in abating, sometimes in completely removing the pain.

In the treatment of neuralgia this remedy

is not so efficacious as aconite. It is useful during pregnancy in diminishing the excessive salivary secretion. In profuse salivation it has been found highly beneficial.

## BISMUTHUM.

### BISMUTH.

*Formula.*—Bi.

*History.*—Found in Cornwall, Saxony, Bohemia, and the United States, native and in combination with sulphur and oxygen.

*Characters.*—A reddish-white metal, composed of brilliant broad plates and readily crystallizable in cubes or regular octahedrons, moderately hard, brittle, pulverizable; fusible at 476° F.

## BISMUTHI SUBNITRAS.

### SUBNITRATE OF BISMUTH.

*Synonym.*—Oxynitrate of Bismuth.

*Formula.*—Old:  $\text{BiO}_3\text{NO}_3, 2\text{HO}$ .

New:  $\text{BiNO}_3\text{H}_2\text{O}$ .

*Characters.*—A heavy white powder in minute crystalline scales.

*Preparation.*—By pouring a concentrated solution of nitrate of bismuth into water; washing, collecting, and drying the resulting precipitate at a temperature not exceeding 150° F.

*Physiological Effects and Therapeutics.*—An astringent, sedative and alterative. In consequence of the frequent relief given by it in

painful affections of the stomach, it is supposed to act on the nerves of this viscus as a sedative.

In diseases of the stomach it is a remedy of established value. It has been particularly recommended to relieve gastrodynia and cramp of the stomach, to allay sickness and pyrosis or water brash.

In chronic laryngitis M. M. Trousseau and Belloc speak highly of the efficacy of the local application of the nitrate, by means of insufflation.

In a sore erythematous condition of the tongue, met with in chronic diseases, Dr. Symonds advises its use, in conjunction with glycerine and elder flower water, as a mouth-wash.

Dr. Ferrier has recommended its use as a snuff in nasal catarrh.

Its continued administration, Dr. Brinten observes, frequently gives rise to the formation of a bluish-red hue along the dental edge of the gums, analagous to, but wider and redder than that resulting from the use of lead.

## CALCIS CARBONAS PRÆCIPITATA.

### PRECIPITATED CARBONATE OF LIME.

*Synonym.*—Precipitated chalk.

*Formula.*—Old:  $\text{CaO}, \text{CO}_2$ . New:  $\text{CaCO}_3$ .

*Preparation.*—Dissolve chloride of calcium and carbonate of soda in water; mix the solutions, and allow the precipitate to subside; collect this on a calico filter, wash it with boiling distilled water, until the washings

cease to give a precipitate with nitrate of silver, and dry the product at a temperature of  $212^{\circ}$  F.

*Physiological Effects and Therapeutics.*—It is good for obtunding the sensitiveness of dentine, its application for a few days, greatly facilitates the excavation of the cavity. It is an antidote for oxalic acid.

*Uses.*—This agent forms the basis of most tooth powders. It is also employed for polishing fillings, artificial plates, &c.

## CALCIS HYPOPHOSPHIS.

### HYPOPHOSPHITE OF LIME.

*Formula.*—Old:  $\text{CaO.P.H O}_3$ .

New:  $\text{CaH}_2\text{P}_2\text{O}_4$ .

*Characters.*—Colourless crystals, which have a pearly lustre and bitter taste; soluble in about six parts of water.

*Preparation.*—Obtained by heating phosphorus with hydrate of lime and water, until phosphuretted hydrogen gas ceases to be evolved, then filtering the liquid and separating the uncombined lime by means of carbonic acid gas; lastly evaporating the solution in vacuo over sulphuric acid, until the salt separates by crystallisation.

*Physiological Effects and Therapeutics.*—The hypophosphites of lime, potash, and soda, are the principal alkaline hypophosphites which have of late years been introduced into medical practice, and as they are closely allied in medicinal properties and uses, they

may be conveniently considered together. They were introduced by Dr. Churchill, and are reputed to be tonic, alterative-stimulant, and nerve stimulant. They are used in cases of general debility, especially where the phosphates are deficient, as they increase the nerve force and are the most powerful of hæmatogens, possessing all the therapeutic properties of phosphorus.

According to Mr. Taylor, who has carefully examined the properties of these salts, the soda hypophosphite is best adapted for blood diseases; and those of potash, lime and ammonia for diseases of the secretory organs. Their assimilation is promoted by sugar.

In cases of nervous depression with neuralgic pains, the hypophosphites prove useful, and the lime or soda salt may be given, according as the stomach bears the one better than the other.

When anæmia is present, the citrate of iron may be added to the soda salt, or else the syrup of hypophosphite of iron, or of iron and quinine. Either of these syrups will prove an active tonic, removing neuralgic pains, and languor of circulation in a very evident way.

In all cases, where there is reason to suppose the phosphates to be morbidly deficient, they may be prescribed with a good prospect of success. The demand for phosphate of lime in the construction of the teeth, contributes to the disturbing influence called the fever of dentition. In these cases, whether they occur

in weakly ill-fed children, or in the robust, the hypophosphites have been employed with marked success: In the former class combined with some tonic or aromatic tincture; in the latter with acetate of ammonia or syrup of rhubarb.

## CALX.

### LIME—OXIDE OF CALCIUM.

*Formula.*— $\text{CaO}$ .

*Preparation.*—Obtained by calcining chalk or limestone so as to expel the carbonic acid.

*Physiological Effects and Therapeutics.*—Quicklime, like the fixed alkalies, is a powerful escharotic and irritant. Lime water, when applied to suppurating or mucous surfaces, checks or stops secretion and produces dryness of the parts; hence it is a desiccant, and is useful in sickness and irritability of the stomach during teething.

The power of exciting and changing the mode of action of the absorbent vessels and glands, has been ascribed to lime water, and probably with some foundation, for under its use glandular enlargements have become softer and smaller—in other words it is a resolvent. It often relieves the superficial ulceration of the mucous membrane of the mouth observed in dyspepsia. In these cases one part of lime water to two or three of milk is usually sufficient. In some scrofulous ulcers its power of checking secretion is most marked. Lime and sugar form a compound considerably more soluble in water than pure

lime. Its solubility is greater in cold water than hot.

*Dose.*—Of Liquor Calcis,  $\frac{1}{2}$  to 2 fluid ounces.

## CAMP H O R.

### CAMP H O R.

*Formula.*— $C_{10}H_{16}O$ .

*Botany.*—A concrete volatile oil, obtained from the wood of *Camphora officinarum*, belonging to the Nat. order, *Lauraceæ*. The Laurel Order.

Imported in the crude form from China and Japan.

*Preparation.*—Obtained by decoction and sublimation; purified in this country by re-sublimation.

*Characters.*—White, translucent, tough and crystalline; has a powerfully penetrating odour and a pungent taste, followed by a sensation of cold. Volatilizes slowly at ordinary temperatures; floats on water in which it is slightly soluble, readily soluble in rectified spirit of wine and in ether.

*Physiological Effects and Therapeutics.*—Externally it is an anodyne or local stimulant. Its local action on the mucous surfaces, the denuded derm, and ulcers, is that of an acid.

In moderate doses, it at first exhilarates and then acts as a sedative, giving rise to diaphoresis, it does this more effectually when combined with other diaphoretics. Opium contributes to the sudorific effects of camphor.

It is a common ingredient in tooth powders, but it is stated (perhaps without sufficient reason) that its continued use in this way renders the teeth brittle.

A strong solution of camphor in chloroform is said to be an efficient remedy in allaying the pain induced by the extraction of teeth during severe periostitis, applied on a pledget of cotton to the alveolar socket.

### CAMPHORÆ MONOBROMIDUM.

#### BROMIDE OF CAMPHOR.

*Formula.*— $C_{10}H_{16}O_{13}Br_2$ .

*Preparation.*—Prepared by the action of bromine on camphor, and subsequent purification with animal charcoal and repeated crystallization.

*Characters.*—A colourless crystalline substance, having a camphoric and terebinthic odour and taste; it is soluble in alcohol, oils, ether, bisulphuret of carbon, &c.; insoluble in water.

*Physiological Effects and Therapeutics.*—"Dr. Bonneville gives it when he desires to produce an energetic sedative effect upon the circulating system, and especially the cerebro-spinal nervous system."

### CATECHU PALLIDUM.

#### PALE CATECHU.

*Botany.*—An extract of the leaves and young shoots of *Uncaria Gambia*, belonging to the Nat. Order, *Cinchonaceæ*. The *Cinchona*

**Order.** Imported from Singapore, and other places.

*Characters.*—In cubes, or masses formed of coherent cubes; externally, brown; internally, ochry-yellow, or pale brick-red, breaking easily with a dull earthy fracture; taste, bitter, very astringent and mucilaginous, succeeded by a slight sweetness; entirely soluble in boiling-water.

*Physiological Effects and Therapeutics.*—Catechu produces the local and remote effects of astringent medicines generally. When of good quality, it is more powerful than kino. In its operation it is closely allied to rhatany.

In *ptyalism*, *ulceration*, and *sponginess of the gums*, and also relaxation of the bowels, a piece of catechu allowed slowly to dissolve in the mouth is often of the greatest service. In *hypertrophy of the tonsils* it forms a very serviceable astringent gargle. A small piece of the catechu inserted into a carious tooth in which there is a fungoid growth, is often productive of relief.

## CERA FLAVA.

### YELLOW WAX.

*History.*—The prepared honeycomb of the hive bee, *Apis mellifica*, belonging to the class, *Insecta*; order, *Hymenoptera*.

*Characters.*—Firm, breaking with a granular fracture, yellowish, having an agreeable honey-like odour. Not unctuous to the touch, does

not melt under  $140^{\circ}$  F., yields nothing to cold rectified spirit, but is entirely soluble in oil of turpentine. Boiling water in which it has been agitated, when cooled, is not rendered blue by iodine.

*Uses.*—In softening yellow wax for impressions, the temperature should be gradually increased to and not exceed  $140^{\circ}$  F.

Either alone, or mixed with cotton, it answers the purpose of a temporary plug, to secure some more potent agent in the cavity of a tooth.

## CHLORAL HYDRAS.

### HYDRATE OF CHLORAL.

*Formula.*—Old:  $C_2HCl_3O_2, 2HO$ .

New:  $C_2HCl_3O.H_2O$ .

*Characters.*—Hydrate of chloral is colourless, and occurs either in rhomboidal plates or acicular crystals; it is soluble in less than its own weight of distilled water, rectified spirit, or ether, and in four times its weight of chloroform.

*Preparation.*—Chloral is produced by the action of dry chlorine gas on absolute alcohol, and purified by treatment, first with sulphuric acid, and afterwards with a small quantity of lime. It is converted into the solid crystalline hydrate, by the addition of a small quantity of water.

*Physiological Effects and Therapeutics.*—As a hypnotic and anæsthetic, it was first brought into notice by Dr. Leibreich, of Berlin, and

its claims have been carefully examined by Dr. B. W. Richardson. In doses of 30 grains or more, dissolved in water, it speedily produces sleep, which generally continues for several hours. It produces (says Dr. Richardson) muscular relaxation, which extends to the muscles of volition, and alike to the iris and the muscular arterial system. The action on the nervous system is primarily on the sympathetic ganglia, afterwards on the cerebrum, and finally on the heart. It may also be administered subcutaneously.

Dr. T. B. Freke concludes that chloral possesses the following advantages over the hypnotics generally employed:—"It is more uniformly certain in its action. It has no depressing influence. It does not cause constipation. It does not produce nausea; and lastly its effects are more permanent." According to Drs. H. Maund and Spencer Wells, it is not without its drawbacks; but notwithstanding, it is regarded as one of the most valuable hypnotics in the *Materia Medica*.

It may be employed in cases of sleeplessness and excitement, where opium or other narcotics are objectionable; also in cases of acute pain, as neuralgic rheumatism.

As it lessens sensibility, and produces extreme muscular relaxation, it may be employed in various medical and surgical cases where it is necessary to overcome muscular resistance or spasm, as in dislocation of the jaw, &c.

*Antidote*.—Strychnia, according to the experiments of Leibreich, acts as a speedy and complete antidote.

## CROTON CHLORAL HYDRATE.

*Formula.*— $C_4H_5Cl_3O, H_2O$ .

*Characters.*—Is a white crystalline powder, slightly soluble in cold water, more so in glycerine.

*Preparation.*—Made by passing chlorine gas through allylene ( $C_3H_4$ ).

*Physiological Effects and Therapeutics.*—Dr. Althaus has drawn attention to the value of this medicine in neuralgia of the fifth nerve. The brain may be narcotized by the croton chloral hydrate without the rest of the nervous system being affected.—*Thorogood*.

*Dose.*—Three to ten grains.

## CHLOROFORMUM.

## CHLOROFORM.

(Formerly termed Chloride of Formyl.)

*Formula.*—Old:  $C_2HCl_3$ . New:  $CHCl_3$ .

*Characters.*—A limpid colourless liquid of an agreeable ethereal odour and sweet taste.

Dissolved by alcohol and ether in all proportions and slightly by water, communicating to it a sweetish taste. Sp: gr: 1.49.

It is exceedingly volatile, producing by its rapid evaporation great cold, with a slight tingling sensation.

Chloroform dissolves volatile oils, resins, camphor, and certain alkaloids.

It has the power of separating iodine, bromine, and certain alkaloids from their watery solutions.

It sinks in water forming globules, impart-

ing no opalescence to it, which would indicate the non-presence of alcohol. The specific gravity would be a further indication of the non-admixture of alcohol.

Soluble salts of baryta detect the presence of sulphuric acid; a pink colour indicates the presence of manganese.

*Preparation.*—By distillation of a mixture of rectified spirit, chlorinated lime and slacked lime, and subsequent purification and redistillation.

*Physiological Effects and Therapeutics.*—In small doses it is stimulant and antispasmodic. In large doses a narcotic impairing sensorial power.

*In the state of vapour*, after the first two or three full inspirations, there is a feeling of warmth and excitation, extending from the chest to the extremities. This is succeeded by whizzing noises in the ears, a sensation of vibratory thrilling and benumbing throughout the body, followed by excitement of the brain with exhilaration, and phenomena similar to those produced by the protoxide of nitrogen, and finally loss of sensation, motion, and consciousness.

Among the unpleasant secondary results of its administration may be mentioned vomiting, headache, and severe collapse; but such cases may be regarded as exceptional. From what has been written regarding ether and chloroform, a mixture of the two is recommended and highly spoken of, as a safer agent than either chloroform or ether alone.

*Poisonous effects.*—The patient passes rapidly into a state of insensibility with stertorous breathing. The face is pale, sometimes livid, the lips congested, the breathing slow and laborious, the surface cold, the pulse sinks and soon becomes imperceptible at the wrist. There is complete and universal relaxation of the muscular system, including the sphincters, with entire loss of sensibility, and the pupils are dilated.

Death has been observed to take place with great rapidity, not more than one or two minutes having elapsed.

There are facts to prove that fatality is not so much dependent on the dose administered—for fifteen drops have proved fatal—as the mode in which the vapour is inhaled, and the condition of the patient at the time. It should *always* be administered with a due proportion of *air*.

As chloroform vapour relaxes the muscular system, it is employed to avert the suffering attendant upon the reduction of dislocations, and other painful and protracted operations.

It has been advantageously employed in neuralgia, spasm of the glottis, and convulsions during dentition, croup, &c.

The local application of chloroform to the gum prior to the extraction of a tooth, very greatly lessens the pain of the operation. That its action may be purely local, cut a piece of pattern lead, or tinfoil, about an inch and a half square, line it with cotton or lint, which saturate with chloroform, adapt it closely to

the tooth and adjacent gum, allow it to remain in close contact about two minutes, then immediately extract the tooth.

*Antidotes.*—When the pulse and respiration are failing, the patient should be placed in a horizontal posture, the tongue drawn forward, cold air fanned across the face, and cold water applied to the head. There should be a free passage of air to the mouth and nostrils, inflation of the lungs with air or oxygen gas, by any of the methods adopted in cases of asphyxia, and artificial respiration should be adopted. Heat and friction may be applied to the chest and abdomen, and stimulants to the nostrils. If a galvanic battery be at hand, apply the positive pole of the battery to the back of the neck, and the negative pole to the end of the breast bone, breaking and renewing the current about fifteen times per minute.

## CINCHONÆ FLAVÆ CORTEX.

### YELLOW CINCHONA BARK.

*Botany.*—The bark of *Cinchona calisaya*, belonging to the Nat. order *Cinchonaceæ*. The *Cinchona* order. Collected in Bolivia, in Southern Peru.

*Characters.*—In flat pieces, uncoated or deprived of the periderm, rarely in coated quills. In pieces from 6 to 18 inches long, 1 to 3 wide, and 2 to 4 lines thick, compact and heavy; outer surface brown, marked by broad, shallow, irregular, longitudinal depres-

sions ; inner surface tawny, yellow, fibrous ; transverse fracture, short and finely fibrous. Somewhat aromatic and persistently bitter.

*Chemistry.*—The principal organic constituents are volatile oil, quinia, quinidine, cinchonine ; tannic, kinic, and kinovic acids.

*Physiological Effects and Therapeutics.*—All the varieties of cinchona are tonic, astringent, and anti-periodic, and are, of all medicines of their class, the most powerful and uniform in their action. They owe their astringency to the kinovic, cincho-tannic, and red cinchonic acids. Their tonic and anti-periodic properties are due to the alkaloids, quinia, cinchonine, and quinidine.

It sometimes happens that where the alkaloids fail to effect a cure, cinchona in substance is successful.

## COBALTUM.

### COBALT.

*Formula.*—Co.

This metal occurs sparingly in nature, found chiefly in combination with arsenic, as the arsenide or "*tin white cobalt*;" or with sulphur and arsenic, as grey cobalt ore or cobalt glance.

*Uses.*—Some prefer the monoxide of cobalt to arsenious acid for destroying the pulps of teeth, being of opinion that less irritation follows its action. It has also been used as an application to sensitive dentine, on the supposition that it is not absorbed so readily as

arsenious acid when employed for the same purpose, but there is no proof of this.

## COLLODION.

### COLLODION.

*Characters.*—A colourless highly inflammable liquid with ethereal odour, which dries rapidly upon exposure to the air, and leaves a thin transparent film, insoluble in water or rectified spirit.

*Preparation.*—By adding one part of pyroxylin to a mixture of 12 ounces of rectified spirit with 36 of ether.

*Uses.*—Collodion is applied to many uses in medicine, surgery and pharmacy. It has been used in cases of alveolar abscess threatening to point externally. It should be applied over the tumor by painting on successive layers with a camel's-hair pencil, so as to act as a compress, and either induce resolution of the abscess or cause it to point into the mouth.

It is also used as a stopping, applied on cotton, or to secure more potent agents in a carious tooth.

## CREASOTUM.

### CREASOTE.

*Formula.*— $C_6H_{10}O_2$ .

Carbolic acid has nearly taken the place of this agent, for, though very nearly identical

in their action, some advantages are claimed for the carbolic acid.—See *Carbolic Acid*.

## CRETA PREPARATA.

### PREPARED CHALK.—CARBONATE OF LIME.

*Formula*.—Old:  $\text{CaOCO}_2$ . New:  $\text{CaCO}_3$ .

*Preparation*.—Chalk freed from most of its impurities (soluble saline matter, flinty and gritty particles) by elutriation, and afterwards dried in small masses, which are usually of a conical form.

*Use*.—An ingredient in tooth powders, but preference should be given to the precipitated chalk of the pharmacopoea, as it is free from the grittiness of prepared chalk; also used in the finishing of stoppings.

## CUPRI SULPHAS.

### SULPHATE COPPER.

*Synonym*.—Blue Vitriol.

*Formula*.—Old:  $\text{CuO}, \text{SO}_3 \times 5\text{HO}$ .

New:  $\text{CuSO}_4 5\text{H}_2\text{O}$ .

*Characters*.—A blue crystalline salt in oblique rhombic prisms, soluble in water, yielding a pale blue solution which strongly reddens litmus.

*Preparation*.—Prepared by heating sulphuric acid and copper scales together, subsequent solution, filtration, and crystallization.

*Physiological Effects and Therapeutics*.—Its topical action is stimulant, astringent, styptic, and caustic.

Applied to ulcers, either for the purpose of repressing excessively soft and spongy granulations, or hastening the process of cicatrization, it is one of the best agents we can employ. In superficial ulcerations of the mucous membrane (especially of the mouth) one or two applications are sufficient.

## DATURA STRAMONIUM.

### THORN APPLE.

*Botany.*—The dried leaves and seeds of *Datura Stramonium*, belonging to the Natural Order *Solanaceæ*. The *Solanum* or potato order. Found all over Europe and other parts of the globe.

*Physiological Effects and Therapeutics.*—Anodyne and anti-spasmodic. Its action is similar to belladonna. In neuralgia it has been employed with considerable success. Aggravation of dyspnœa, paralytic tremblings, epilepsy, headache, and apoplexy, are some of the evils said to have been induced in different cases. In those disposed to head affections, and in aged persons, it is, therefore, highly dangerous.

## FERRI IODIDUM.

### IODIDE OF IRON.

*Synonym.*—Ferrons Iodide.

*Formula.*—Old:  $\text{FeI}$ . New:  $\text{FeI}_2$ .

*Characters.*—Crystalline, green with a tinge of brown, inodorous, deliquescent, almost

entirely soluble in water, forming a slightly green solution which gradually deposits a rust-coloured sediment (peroxide of iron); a coil of iron wire introduced into the solution partly remedies this deteriorating action.

*Preparation.*—Made by digesting iron wire and iodine in water at a gentle heat, evaporating until a drop of the solution taken out on the end of an iron wire solidifies on cooling. The liquid should now be poured out on a porcelain dish, and, as soon as it has solidified, broken into fragments and enclosed in stoppered bottles.

*Physiological Effects and Therapeutics.*—An alterative, tonic, and emmenagogue. It is a very valuable salt, and particularly adapted for persons having scrofulous enlargement of the lymphatic glands, also other forms of scrofula attended with debility and emaciation. It often proves very useful in secondary syphilis, where the constitution is much debilitated and cachectic.

The syrup is the best form for administration.

*Dose.*—Of the syrup,  $\frac{1}{2}$  to 1 drachm.

## FERRI ET QUININÆ CITRAS.

### CITRATE OF IRON AND QUININE.

*Formula.*—Liable to variation.

*Characters.*—Greenish golden yellow scales, somewhat deliquescent, soluble in water, and having a strongly bitter taste.

*Preparation.*—Made by dissolving ferric

hydrate in a solution of citric acid and adding the recently precipitated quinia to it. A very dilute solution of ammonia is gradually dropped in, which changes the reddish brown colour of the liquid to a greenish tint; it is then filtered, evaporated and scaled.

*Medicinal Properties and Action.*—Blood restorative, tonic, and anti-periodic. It possesses the properties of both iron and quinia, and is admirably adapted for children and delicate females, being easily borne when the stronger salts of iron are inadmissible.

## FERRI ET STRYCHNIAE CITRAS.

### CITRATE OF IRON AND STRYCHNIA.

*Preparation.*—Dissolve 980 grains of citrate of iron in 9 ounces of water; also 10 grains of strychnia and 10 grains of citric acid in one ounce of water; mix the solutions, evaporate to syrupy consistence and scale.

*Medicinal Properties and Action.*—Blood restorative, tonic, and nerve stimulant. It possesses the combined properties of iron and strychnia. A citrate of iron, quinine, and strychnia is also manufactured containing the same proportion of strychnia.

## GALLÆ.

### GALLS.

*Botany.*—Excrescences on the *Quercus Infectoria* or Dyer's Oak, belonging to the Natural Order *Cupuliferæ* or *Corylaceæ*. The

Oak or Mastwort order. They are caused by the puncture and deposited ova of the *Cynips* or *Diplolepis Galla tinctoriæ* or gall insect, a member of the order *Hymenoptera*. Imported from Asia-Minor and Persia.

*Characters*.—Hard, heavy, globular bodies, varying in size, tuberculated on the surface, the tubercles and intervening spaces smooth, of a blueish green colour, yellowish white within, with a small central cavity; intensely astringent. The dark coloured imperforated are the best.

*Physiological Effects and Therapeutics*.—See *Tannic and Gallic Acids*.

## GELSEMIUM SEMPERVIRENS.

### GELSEMIN.

*Synonyms*.—Yellow Jessamine, Wild Jessamine, Woodbine, &c.

*Botany*.—A twining perennial belonging to the Natural Order *Scrophulariaceæ*. The Figwort order. Indigenous in the Southern States of North America.

*Chemistry*.—No accurate analysis of its chemical constitution appears to have been made, but its virtues are said to reside in a peculiar alkaloid principle termed *gelsemia*. Although all parts of the plant are active, the root is generally employed.

*Physiological Effects and Therapeutics*.—It is readily absorbed into the blood, and exercises a sedative action on the nervous system; like conium it is a paralyzer, but unlike it in

its mode of action the paralysis does not commence at the periphery. Gelsemium destroys muscular irritability, impairs the sensibility of the sensory nerves.

In large doses it is poisonous, causing great prostration, nausea and vomiting, dilatation of the pupils, and more or less loss of sight, inability to speak or move, coldness of the surface, and death by asphyxia—paralysis of the muscles of respiration.

In neuralgic and rheumatic affections it has been used with the most beneficial results, in doses of 10 to 20 minims of the tincture.

Dr. Miller has used it with success as an external application in neuralgia. Dr. Patten thinks it can well rank as a *direct* sedative to the nervous system.

*Antidotes.*—Ammonia, brandy, quinine, and perhaps iodine.

## GLYCERINUM.

### GLYCERINE.

*Formula.*—Old:  $C_6H_5O_6$ . New:  $C_3H_5(OH)_3$ .

*Characters.*—A clear colourless fluid, oily to the touch, without odour, of a sweet taste, freely soluble in water and in alcohol. Should leave no residue when strongly heated in a capsule.

*Preparation.*—Produced in the saponification of fats and fixed oils.

*Uses.*—A valuable application to some diseases of the skin and of the mucous membranes, either alone or in conjunction with

other substances. When used alone, it probably owes its efficacy to its physical properties, that of excluding air, and not drying at ordinary temperatures. It is a good solvent for many substances, such as borax, tannic acid, carbolic acid, gallic acid, arsenious oxide, &c., some of which are but slightly soluble in water.

## GUAIACUM OFFICINALE.

### GUAIACUM.

*Botany.*—A tree belonging to the Natural Order *Zygophyllaceæ*. The Guaiacum order. The wood (*Lignum Vitæ*), which is imported from St. Domingo and Jamaica, is reduced by the turning lathe to coarse powder or small chips. The most important constituent of the guaiacum wood is a peculiar resin.

## GUAIACI RESINA.

### GUAIACUM RESIN.

*Characters.*—Occurs in tears and in masses. Guaiacum in tears is found in rounded or oval particles of variable size. Lump guaiacum is the ordinary kind met with in commerce; it occurs in masses of considerable size, of a brownish or greenish brown colour, having a brilliant shiny resinous fracture and a balsamic odour. A solution in rectified spirit produces a clear blue colour when applied to the inner surface of a paring of a raw potato.

*Preparation.*—The resin is obtained from

the stem by natural exudation, by incisions, or by heat.

*Physiological Effects and Therapeutics.*—Both wood and resin are stimulant, diaphoretic, alterative, and tonic.

It appears to have great power in lessening excessive secretion from mucous surfaces, and in stimulating the action of the skin and kidneys. In its operation on the system it is allied to the balsams and turpentine. Its use is interdicted in cases of impaired digestion, inflammatory tendencies of the alimentary canal, and also in plethoric subjects.

In *chronic* rheumatism, guaiacum has maintained its character as a valuable remedy. In some forms of *neuralgia*, when partaking of a rheumatic character, the ammoniated tincture (m XX—XL every four hours) affords relief. In *cynanche tonsillaris*, Mr. J. Bell strongly recommends the internal use of guaiacum in half drachm doses every six hours—suspended in mucilage.

In the form of lozenges (*trochisci guaiacici*) it arrests inflammation of the tonsils, and is useful both in acute and sub-acute inflammation of the pharynx, &c.

In *syphilis*, guaiacum was formerly regarded as a specific.

## ISONANDRA GUTTA.

### GUTTA PERCHA.

*Botany.*—The concrete juice of *Isonandra Gutta* (and probably other species). The

Gutta Percha or Taban tree. A native of Sumatra, Borneo, and other Eastern islands. Belonging to the Natural Order *Sapotaceæ*. The Sapota or Sapodilla order.

*Characters.*—In tough flexible pieces, of a light brown or chocolate colour; soluble, or nearly so, in chloroform, yielding a more or less turbid solution, which may be decolorized by the addition of carbonate of lead; or the chloroform solution may be filtered (in a suitable apparatus), the Gutta Percha precipitated by the addition of rectified spirit of wine, washed in rectified spirit, dried in the air, and finally boiled in water in a porcelain vessel for half-an-hour, and while still hot rolled into sticks.

*Uses.*—In conjunction with silica it forms a most useful stopping. A solution of it (in chloroform) may be employed to paint recent oxy-chloride of zinc fillings. It protects the surface of stoppings from the action of the fluids of the mouth until they are sufficiently hard not to be injuriously affected by them. In this form it is also useful to secure applications to sensitive surfaces or cavities; the surface of the tooth should be carefully dried, the medicine placed in position, then covered with a strip of muslin dipped in the solution, and protected until the chloroform has entirely evaporated.

It is used for lining artificial dentures. Truman's Gutta Percha, being devoid of impurities, should be used for this purpose.

It is also used for taking sharp impressions

of the mouth, but owing to the contraction of the Gutta Percha, the models from such impressions will not do to work upon.

## HYDRARGYRUM.

### MERCURY—QUICKSILVER.

*Formula.*—Hg.

*History.*—Is found either pure in the form of globules, or combined with silver; but chiefly in combination with sulphur, as a sulphide. The principal mines containing it are those of Idria in Carniola, Almaden in Spain, and New Almaden in California. It is usually imported in iron bottles holding from 60 lbs. to 100 lbs.

*Characters.*—Fluid at common temperatures, brilliantly lustrous, and easily divisible into spherical globules. Volatilises at a heat below that of visible redness, leaving no residue. Faraday has shown that at common temperatures, and even when the air is present, mercury is surrounded by a mercurial atmosphere. It boils at  $662^{\circ}$  Fah. Its specific gravity is 13.5.

*Preparation.*—The extraction from the native Cinnabar (Sulphide of Mercury) is effected by mixing it with caustic lime and distilling in an iron retort. The products are sulphide of calcium, sulphate of lime, and mercury; which distils over.

*Purification.*—The purity is ascertained by its brilliancy and great mobility. Mechanical impurities—such as adhering dirt or dust—

are instantly detected, and may be separated by straining through flannel or wash-leather. The presence of lead, tin, zinc, or bismuth, may be suspected by the rapidity with which the metal tarnishes in the air, and by its globules forming a *tail* or train when made to roll on a flat surface, instead of preserving a spherical form.

Mercury is readily purified by re-distillation; or by adding to it a little strong solution of nitrate of mercury, agitating well and often for some time, then washing, drying, and straining through flannel; the inferior metals, tin, &c., are oxidized, whilst metallic mercury is reduced from the nitrate.

*Uses.*—Mercury is used in the production of amalgams, and is sometimes employed in the removal of amalgam stoppings. The mercury is applied by means of a suitable instrument with a silver point: the silver point having been scraped bright, is dipped into the mercury, and applied to the stopping; the affinity of the mercury for the silver causes a portion of it to adhere to the instrument, which on coming into contact with the amalgam stopping is overcome, unites with the filling, reduces it to a plastic condition, and thus allowing of its easy removal. It is the practice of some to drill a cavity in the filling, and to place a globule of mercury in it, which soon softens the entire mass.

*Physiological Effects and Therapeutics of Mercurial Compounds.*—*Local Effects.*—These for the most part are alterative and more or

less irritant. Many of the salts, as corrosive sublimate and the nitrate, are energetic caustics.

*Remote Effects.*—In small and repeated doses, the first obvious effect of mercurials is an increased activity in the secreting and exhaling organs. The absorbent or lymphatic system seems also to be stimulated to increased activity; at the same time, glandular swellings, enlargements, and indurations of various kinds are dispersed. When we desire to obtain the sialogogue effects of mercury, we give somewhat larger or more frequent doses. Of all the secretions, none are so uniformly and remarkably augmented as those of the mucous follicles of the mouth and salivary glands, and the increased secretion is accompanied by more or less tenderness and inflammation of those parts, the whole constituting what is termed salivation or ptyalism. The first symptoms are slight tenderness and tumefaction of the gums, which acquire a pale rose colour, except at the edges surrounding the teeth, where they are a deep red. Gradually the mouth becomes very sore, and the tongue much swollen, a coppery taste is perceived, the teeth are slightly loosened, and the breath acquires a remarkably foetid odour; the salivary glands soon become tender and swollen, the saliva and mucus of the mouth flowing abundantly.

In Syphilis, the careful and sufficiently prolonged administration of mercury, carried to a degree short of ptyalism, is usually

followed by the best results. In syphilitic ulcerations of the mouth and fauces the application of a mixture of blue pill and glycerine is frequently very beneficial.

As alteratives, mercurials are given in small doses. Calomel is said to be less beneficial as an alterative than blue pill or grey powder. As a purgative it is given in larger doses.

## IODUM.

### IODINE.

*Formula.*—I.

*History.*—A non-metallic (metalloid) element, discovered in 1812 by M. Curtois, and is obtained principally from the ashes of seaweeds. It exists largely in many marine plants.

*Characters.*—Iodine is very sparingly soluble in water, but freely so in alcohol, ether, and solution of iodide of potassium or chloride of sodium. It occurs in crystalline plates or scales, of a peculiar odour, dark colour, and metallic lustre. When heated, it sublimes, yielding a beautiful violet vapour, without leaving any residue. An aqueous solution strikes a deep blue colour with a cold solution of starch, even in very dilute solutions.

*Preparation.*—The sea-weed is collected and dried, then submitted to distillation in iron retorts, part of the iodine is sublimed and condensed in the retort, whilst iodides of sodium, magnesium, and other salts remain

in the retort, with charcoal in a minute state of division. The residue in the retort is then treated with water, and the less soluble salts crystallize out, leaving the more soluble in the mother liquor. This is evaporated to dryness, then mixed with bin-oxide of manganese and sulphuric acid, and subjected to heat, when the iodine sublimes, and may be purified by re-sublimation.

*Physiological Effects and Therapeutics.*—When given internally in small doses, it is an alterative-tonic, and imparts increased activity to most of the excreting and secreting organs. Iodine and its compounds, as remedial agents, are principally valuable for their resolvent influence in glandular enlargements, indurations, thickening of membranes (as the periosteum) and tumours; it appears to have a specific influence upon the Thyroid body.

Dr. Davies states that in malignant and other ulcerations of the tongue and tonsils, &c., he has met with uniform success by the use of iodine. The tincture may be applied locally by means of a fine brush, or made into a gargle, diluted with 7 or 10 parts of water with the addition of honey.

Mr. W. Martin Coates details the cure of a large *ranula* by the injection of the compound tincture—(m xv)—using one of Wood's syringes.

*In Phagedenic ulcerations*, the tincture of iodine has been extensively employed by Ricord. He found it very efficacious, and prefers it to all other preparations. Mr.

Key regards it as one of the most powerful remedies we possess for arresting the threatened destruction of the soft parts. When administered internally, it should be in combination as iodide of potassium, &c.

*In Syphilitic Gummata and Nodes*, Mr. Acton states that the best local treatment consists in painting the affected parts every night and morning with the tincture.

*In Acute and Chronic Periostitis*.—A strong tincture, either alone or in conjunction with carbolic acid, painted upon the gum and around the neck of the affected tooth, or upon the surface of the part affected, is most beneficial.

In discoloration of the skin from a long use of the *nitrate of silver*, Dr. Patterson strongly advises the internal and external use of iodine and its salts, as affording the best chance of restoring the natural colour.

## IRIDIS RHIZOMA.

### ORRIS RHIZOME.—ORRIS ROOT.

*Botany*.—The so-called Orris root of commerce consists usually of the rhizomes of three species of *Iris*. *Iris florentina*, *I. pallida*, and *I. germanica*. Belonging to the Natural Order *Iridaceæ*—the Iris or Corn-flag order. It is brought to us in the decorticated state, in casks, from Leghorn and Trieste.

*Characters*.—Occurs in pieces, simple or branched, more or less knotty, about the thickness of the thumb, of a whitish colour,

bitterish acrid taste, and a violet odour. This odour is acquired in the process of drying.

*Uses.*—Used in tooth powders on account of its violet odour. During teething, infants are sometimes permitted to rub their gums with and bite it, but the practice is objectionable, as it contains an acrid substance which often causes derangement of the bowels.

## KRAMERIÆ RADIX.

### RHATANY ROOT.

*Botany.*—The dried root of *Krameria Triandra*. Belonging to the Natural Order *Krameriaceæ*—the Rhatany order. Imported from Peru.

*Physiological Effects and Therapeutics.*—A powerful and valuable astringent; which property chiefly depends upon the tannin, good specimens containing about 40 per cent. In passive hæmorrhages, rhatany, either in the form of infusion or extract, has been found signally beneficial. It is doubtful whether it possesses any advantage over tannin.

In spongy and bleeding gums, the powder has been employed as a dentifrice; the tincture is also a good application. The infusion forms a useful gargle in some varieties of relaxed sore throat.

## LITMUS.

### LITMUS.

A blue pigment, prepared from various

species of *Rocella*, belonging to the Natural Order *Lichenes*—Lichen order.

The lichens are natives of the east coast of the Atlantic, and the west coast of South America. They are also met with on the extreme south coast of England, Guernsey, and the Scilly islands.

Blue Litmus paper is made by steeping unsized paper in the tincture, and drying by exposure to the air.

Red Litmus paper is prepared in similar manner, having previously reddened the tincture by the addition of a very minute quantity of sulphuric acid.

*Uses.*—As a test paper for acids and alkalies. Blue litmus paper is turned red by acids, while red is turned blue by alkalies.

## LIQUOR SODÆ CHLORATÆ.

### SOLUTION OF CHLORINATED SODA.

*Synonym.*—Labarraque's *Disinfecting Solution*.

*Chemistry.*—A mixed solution of hypochlorite of soda, chloride of sodium, and bi-carbonate of soda.

*Characters.*—A colourless alkaline liquid, with an astringent taste, and feeble odour of chlorine.

*Preparation.*—By slowly passing washed chlorine into a solution of carbonate of soda. It should be preserved in a stoppered bottle, in a cool, dark place.

*Physiological Effects and Therapeutics.*—The

concentrated solution is an irritant poison and caustic. When slightly diluted it is a powerful irritant; largely diluted, it acts as a tonic and stimulant. It is an excellent deodorising agent, and forms an efficacious remedy in aphtha, stomatitis, and cancrum oris.

In all affections of the mouth attended with a foetid discharge—as mercurial salivation, the ulcerated gums of scurvy, and carious teeth—it proves highly serviceable, correcting the foetor, and, by its stimulating property, inducing a healthy reaction.

## MAGNESIA.

### MAGNESIA.

*Synonym.*—Protoxide of Magnesium.

*Formula.*— $MgO$ .

*Preparation.*—Prepared by calcining carbonate of magnesia in a Hessian crucible at a red heat, until, by the addition of dilute sulphuric acid, there is no effervescence.

*Physiological Effects and Therapeutics.*—An antacid and laxative. As an antacid it is preferable to the carbonate, as the latter, when brought in contact with the acid of the stomach, gives rise to much flatus.

It is serviceable in pyrosis, in aphtha, and aphthous ulcerations, and is also a useful adjunct to tooth powders.

*Dose.*—10 to 60 grains.

## MAGNESIÆ SULPHAS.

## SULPHATE OF MAGNESIA.

*Synonym.*—Epsom Salts.

*Formula.*—Old:  $\text{MgOSO}_3 \times 7\text{HO}$ .

New:  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ .

*Preparation.*—Prepared from Dolomite or magnesian limestone by means of the action of dilute sulphuric acid upon it.

*Physiological Effects and Therapeutics.*—A refrigerant and saline purgative. In dyspepsia, accompanied by costiveness, the sulphate of magnesia, in small doses, has been found very effectual.

*Dose.*—Refrigerant, 10 to 60 grains. Purgative,  $\frac{1}{4}$  to  $\frac{1}{2}$  ounce or more.

## MATICÆ FOLIA.

## MATIO LEAVES.

*Botany.*—The dried leaves of *Artanthe Elongata*, belonging to the Natural Order *Piperaceæ*—the Pepper order. Imported from Peru.

*Physiological Effects and Therapeutics.*—Aromatic bitter stimulant, slightly astringent. It may be given internally in powder, infusion, or tincture. As an internal remedy, its astringent properties are not well marked. Externally it is a reliable hæmostatic, the effect is probably due rather to the mechanical action of the leaf than to astringency. Hæmorrhage from leech-bites, from superficial wounds, and that following the extraction of teeth, &c., may be readily arrested

by the local application of the underside of the leaf.

## MORPHIA.

### MORPHIA.

*Formula.*— $C_{17}H_{19}NO_3$ .

An alkaloid contained in opium, of which it constitutes the chief narcotic principle; the proportions varying from 2 to 12 per cent.

*Physiological Effects and Therapeutics.*—As therapeutic agents, the salts of morphia (Acetate and Hydrochlorate) are preferable to the alkaloid itself, on account of their greater solubility.

In tic-doloureux and other neuralgic affections, no remedy promises more speedy and permanent benefit than morphia subcutaneously injected. Affections of this kind, observes Dr. Anstie, which under any of the older plans of treatment would at least have been very tedious, are sometimes cured after three or four injections of one-sixth of a grain, and very many yield after a week or ten days employment of such injections repeated twice daily. It may almost be regarded as a specific.

The endermic application of morphia ( $\frac{1}{2}$  to 1 grain) sprinkled on a blistered surface over the seat of pain, is sometimes effectual, but is less certain in its operation than when injected hypodermically.

Morphia, in combination with carbolic acid, is an excellent application to obtund the pain of an exposed or sensitive pulp.

## MYRRHA.

## MYRRH.

*Botany.*—A gum-resinous exudation from the stem of *Balsamodendron Myrrha*, belonging to the Natural Order *Amyridaceæ*—the Myrrh Order. Collected in various parts of Africa and Asia.

*Uses, Physiological Effects and Therapeutics.*—Myrrh is a mild astringent and moderate stimulant. It appears to possess the power of diminishing excessive secretions from the mucous membrane. It is used as a dentifrice, sometimes alone, but mostly with other substances.

The tincture undiluted is serviceable when applied to foul and indolent ulcers of the mouth. Diluted it is useful as a stimulating mouth wash in sponginess and ulceration of the gums, and also in other affections of the mouth and throat.

## NITROSUM OXIDUM.

## NITROUS OXIDE.

*Synonyms.*—Protoxide of nitrogen; Laughing gas.

*Formula.*—Old: NO. New:  $N_2O$ .

*History.*—Discovered by Dr. Priestly in 1776; he called it *Dephlogisticated Nitrous Air*; Sir H. Davy called it *Nitrous Oxide*; it is commonly called *Laughing Gas*.

At the close of the last century Sir H. Davy suggested that it might be used in certain

surgical operations for the prevention of pain. Its applicability as an anæsthetic in surgery was also noticed by the late Sir J. Y. Simpson, in 1847; but, for the want of an effective apparatus, it was not till twenty years afterwards that it came into general use, and then only in those cases where speedy anæsthesia was required for short operations, to which its use has been principally limited. About this time the attention of the late Horace Wells and Dr. Colton was directed to its applicability in Dental Surgery. It was introduced by the latter to Dr. Evans, of Paris, and by him in 1868 to the Dental profession in England.

*Characters.*—A colourless, transparent, and almost inodorous gas, having a sweet taste. Sp. gr. 1.525. It liquifies at a pressure of 50 atmospheres at 45°F.

*Preparation.*—By subjecting pure Nitrate of Ammonia to a temperature of about 400°F in a retort or flask (taking care that the temperature does not exceed 480°F) Nitrous Oxide Gas is evolved; wash, and collect it over tepid water, as cold water dissolves nearly its own weight of this gas. If a higher temperature than 480°F be applied, Nitric Oxide will be given off. This may be separated by passing the gas through a solution of Sulphate of Iron (green vitriol). Sometimes the Nitrate of Ammonia contains Chloride of Ammonium, if so the Nitrous Oxide Gas will be impregnated with Chlorine. To ensure the absence of this, the gas should be passed through a

solution of caustic potash, and finally through tepid water.

For ascertaining the purity of nitrate of ammonia the following simple tests may be employed. 1st. Take two grains of the salt and dissolve it in half a drachm of distilled water in a test tube; to this solution add, drop by drop, a small quantity of one containing 4grs. of nitrate of silver in a drachm of distilled water. A light cloud and curdy deposit will indicate the presence of chlorides. 2nd. To a similar solution of the nitrate of ammonia as above described, add a small quantity of one composed of 6grs. of chloride of barium in a drachm of distilled water. A white cloud will indicate the presence of carbonates or sulphates. These test solutions may be preserved for future use.

*Physiological Effects and Therapeutics.*—The pure gas, when inhaled in the ordinary way, produces exhilaration and narcotism, and this without asphyxia; but when atmospheric air is carefully excluded, it produces anæsthesia without exhilaration. The effect, however, only lasts a short time. The time required to produce anæsthesia is from 25 to 120 seconds, by from 10 to 60 inhalations, and a consumption of from 2 to 8 gallons of gas. Dr. Barnes kept a patient 10 minutes under its influence, and no unpleasant symptoms accompanied or followed its use. He has stated he would not hesitate to employ it longer if necessary. Two cases are mentioned by him where the operation lasted

over an hour and a-half,—*Medical Times*, 1875. By Mr. R. Rendle it is said to be safe in all short operations, and perhaps in long ones also, provided there is due admission of air at proper intervals.

It is evident that nitrous oxide has a strong affinity for the blood corpuscles, that it may usurp the place of oxygen in them, and prevent for a time that combination of oxygen with Hæmaglobin upon which the red colour of the corpuscles depends; yet chemistry has not shown that nitrous oxide is decomposed in the blood, nor that it exerts any of the chemical properties of oxygen on the constituent elements of the blood.

The moment the slightest anæsthetic effect is produced upon the nervous system, the medulla oblongata, the spinal cord, the nerves of organic life, the cerebrum, and the cerebellum are affected simultaneously. To oxidation is undoubtedly due the whole available force in the body. This oxidation is mainly, if not entirely effected by the blood, and it is therefore evident that a continuous flow of oxygenated blood to the nerve centres is necessary as a source of power, as well as for regeneration of the nerve tissue. Any deficiency of oxygen in the blood is followed by a decreased arterialisation of the whole volume of the blood. In this case the exhalation of carbonic acid is relatively less rapid than its production, and life is impossible when the blood in the arteries has become thoroughly venous in colour and character.

When nitrous oxide has been absorbed by the blood the most obvious result is a change in the colour of the corpuscles, and consequently, lividity of the face and mucous surfaces. The latter is characteristic in those subjected to its influence, and the darkened colour of the blood is observed when it flows from the severed vessels. This colour of the blood is probably to be partly ascribed to uneliminated carbonic acid; but that nitrous oxide has in a high degree the property of darkening the blood corpuscles may be proved by directing for a few seconds a jet of the gas upon a little arterial blood in a test tube. Yet from what has already been said this change is due to physical rather than to strictly chemical action.

An interruption of the circulation in any part of the system is soon followed by local insensibility in the tissues from which the blood supply may have been withdrawn; and it is also true that during the anæsthetic state the circulation of the blood through the capillary system becomes sluggish. A tendency to stasis begins to appear, while at the same time the supply of arterial blood is considerably reduced. These are facts of direct experimentation, which has also been employed to furnish the proof that the brain itself was during the period of anæsthetic insensibility in a state of comparative anemia. In brief, it is most probable that an arrest of the capillary circulation through the brain to which several writers have attributed a poten-

fluence in its causation of anæsthesia is so far as it may exist a *result* of the hetic state.

From the foregoing, and from what has been written upon the subject, the following conclusions and propositions may be here established:—

1. Carbonic oxide when passed through arterial blood in a test tube darkens its colour.

2. When nitrous oxide is inhaled the patient assumes a dusky hue, and the blood which flows from a ruptured vessel is dark in colour.

3. The gas eliminated from the lungs is exactly in the same condition as when it is inhaled.

4. The lividity due to the blood not being saturated—to carbonic acid taking the place of oxygen—or to an altered condition of the blood, the result of the immediate chemical and (physical) action of nitrous oxide.

5. Anæsthesia would appear to be due to an altered condition of blood, whereby the molecular changes are interfered with: such interruption is probably due either to retention of carbonic acid, or to the presence of nitrous oxide; or, as in both cases, to the exclusion and absence of oxygen.

6. Advantages of the Protoxide of Nitrogen over other anæsthetics for minor operations:—

Its safety.

2. The shorter time in which anæsthesia can be induced, viz., 25 to 120 seconds.

3. The readiness with which the patient can be kept for either a long or a short period under its influence.

4. Its effects pass off quickly.

5. No danger of ignition.

6. Being pleasant to inhale, and not irritating (if pure) to the air-passages, fright and mental distress are avoided, thus diminishing the danger of death by syncope.

7. Because sickness and other unpleasant after-effects are very rare.

Conditions to be observed in its administration:—

1. When the services of an experienced administrator cannot be had, an intelligent assistant should be present—the administration and operation should never be performed single-handed. The apparatus or face piece recommended is that introduced by Mr. Clover. The patient being placed in a good light, and on a chair constructed for supporting the head so that it cannot easily slip. The dress, if tight, loosened.

2. The gas should be *perfectly* pure, free from all trace of chlorine and nitric oxide, and tolerably fresh.

3. The patient should not have taken food for at least two hours before the administration; at the same time it is desirable to guard against exhaustion.

4. The tube through which the inhalation takes place should be of larger diameter than

the trachea, and a liberal supply of gas should be kept up. It is an advantage to have the pressure of gas in the bag slightly in excess of the atmospheric pressure; this will diminish the risk of the admission of air in consequence of any imperfection in the adjustment of the face-piece.

5. The face-piece should be most accurately adjusted, and where the face is much covered with hair the latter should be well soaped, for it is essential that air be most carefully excluded until the patient be fully under its influence.

6. The patient should be instructed to breathe deeply, regularly, and fearlessly, and to breathe out thoroughly.

7. The evidence of the full effect of the gas is shown by the blue colour of the lips, breathing becoming stertorous, and the insensitiveness of the conjunctiva.

8. Its inhalation should not be continued for a longer period than one and a-half or two minutes without the admission of air to the lungs.

In addition to the above suggestions it is advisable to maintain perfect quietude, both during the inhalation and recovery. The operator and administrator should be as much out of sight as convenient, and thus avoid any disturbance of the patient's mind during the period of semi-consciousness. The gag should be very carefully made and adjusted; also attached to another gag or weight (out of the mouth) by means of strong silk cord.

When several teeth are to be removed at a single inhalation, the operator should commence with those farthest back in the mouth, and with the lower before the upper teeth; by so doing the view of the teeth to be removed is less obstructed by the bleeding from those already extracted. When the condemned teeth are extracted the head should be held forward so as to allow the blood to escape through the mouth, but the gag is not usually removed until consciousness is restored. If these conditions are observed, little fear need be apprehended.

As any interference or suspension of either the nervous, circulatory, or respiratory systems cannot be resorted to without some risk to life, it may be well to briefly consider the conditions under such circumstances.

Death arises either by coma, syncope, or asphyxia.

*Coma*—or deep sleep.—The arrest of the functions of the brain, caused either directly or indirectly by the injurious effects upon it of some noxious agent.

*Syncope*—fainting or swoon.—A sudden suspension of the heart's action, accompanied by cessation of the functions of the organs of respiration, internal and external sensation, and voluntary motion, caused either by some derangement of the circulatory system, the nervous system, or other organs of the body.

*Asphyxia*—or more correctly *Apnæa*—the former term meaning pulselessness, the latter breathlessness. It is this latter condition we have to do with.

1. It may be caused either by an arrest of the action of the muscles of respiration, due to exhaustion of the muscles; by the loss of nervous influence; by mechanical restraint; or by tonic spasm.

2. By a cessation of the action of the lungs, due either to division or compression of the pneumogastric division of the eighth pair of nerves; to mechanical obstructions, as admission of air, abdominal viscera, &c., into the chest by wounds.

3. Exclusion, partially or entirely, of atmospheric air from the lungs. This may arise from extreme rarification of air; mechanical exclusion, as by a foreign body in the larynx, trachea, or upper part of the oesophagus; by submersion, by suffocation, strangulation, or suspension; or the atmospheric air may be replaced by a gas which acts merely by excluding it; or, lastly, by irritant gases, producing spasm of the glottis.

When the process of respiration is stopped, either by arresting the respiratory movements, or permitting them to continue in an atmosphere deprived of uncombined oxygen, the circulation of blood through the lungs is retarded, and at length stopped; there is circulation of venous blood to the brain and body, and consequent impairment of their functions. The effect of the impaired pulmonary circulation is an obstruction to the exit of blood from the right ventricle; this is followed by delay in the return of venous blood to the heart, and to this succeeds

venous congestion of the medulla oblongata and the nervous centres. Hence slowness and disorder of the respiratory movements, and consequently of the cardiac movements. Under these combined conditions the heart at length ceases to act; as already implied, the cessation of its action being in a great measure brought about by the imperfect supply of oxygenated blood to its muscular tissue.

To the accumulation of carbonic acid in quantities too large to be eliminated by the secreting apparatus of the lungs, and the consequent turgescence of the capillary vessels, must in the first place be ascribed the phenomena of asphyxia.

The administrator of this anæsthetic should have special regard to the respiration, the pulse, the eye, and the countenance.

When asphyxia results from the administration of anæsthetic agents, such efforts should be made for resuscitation as the following. The main reliance is on artificial respiration; this should be resorted to without a moment being lost. The action of the heart usually continues for three or four minutes after respiration has ceased; these are the precious minutes. There are two methods whereby to effect artificial respiration. The Marshall Hall method is as follows:—

Having drawn forward the patient's tongue (either with forceps or a tenaculum), lie the patient on the face, with the right arm doubled under the forehead so as to prevent

obstruction to the mouth, then turn the body gently, and completely, on the side and a little beyond, alternately repeating these measures deliberately, efficiently, and perseveringly, fifteen or twenty times in a minute. When the patient reposes on the thorax, this cavity is compressed by the weight of the body, and expiration takes place; when he is turned on the side this pressure is removed, and inspiration occurs. When the prone position is resumed, make equable but efficient pressure along the spine, removing it immediately before rotation on the side (the first measure augments the expiration, the second commences inspiration).

The other method of producing artificial respiration is known as Sylvester's. It consists in lying the patient on his back, drawing the tongue forward, then carrying the arms slowly upward over the head, thus elevating the ribs by means of the pectoral muscles, and inducing inspiration; the arms are then brought down to the side of the chest, and slightly compressed against it; these movements are to be repeated slowly, as in the other method.

Though the main reliance is on artificial respiration, fresh air should be admitted by the door, window, or fan; stimulating applications applied to the surface, and cold water to the face and head. If a galvanic battery be at hand, it should be resorted to among other possible means of restoring animation, applying the positive pole of the battery to

the back of the neck, and the negative pole to the end of the breast-bone, breaking and renewing the current about fifteen times per minute.

As soon as the patient can swallow, give brandy and ammonia. Efforts at resuscitation should not cease until death is evidently beyond all question.

## OLEUM CAJUPUTI.

### OIL OF CAJUPUT.

*Botany.*—The volatile oil of the leaves of *Melaleuca Minor*, belonging to the Natural Order *Myrtaceæ*. The Myrtle Order. Imported from Batavia and Singapore.

*Extraction.*—Rumphius states that the leaves are gathered on a warm day, and placed in a sack, where they become hot and damp. They are then macerated in water, and left to ferment for a night, and afterwards submitted to distillation.

*Characters.*—Transparent, limpid, of a pale-bluish or myrtle-green colour, having a strong penetrating agreeable odour, resembling that of camphor, rosemary and cardamoms combined, and of a warm camphoraceous taste. Sp: gr: 0.914 to 0.930. Soluble in alcohol.

*Physiological Effects and Therapeutics.*—A diffusible stimulant, anti-spasmodic and diaphoretic. It is a medicine of much power and value. From the ordinary distilled oils

(such as those derived from labiate plants and the umbelliferous fruits) it is distinguished by its strong influence over the nervous system, as evinced by its antispasmodic qualities and the greater diffusibility of its stimulant properties. It is allied to valerian, between which and camphor it ought to be placed in a physiological classification, but in large doses it does not disorder the mental faculties as those medicines do.

In neuralgic affections it may be beneficially employed externally and internally, but its use is interdicted when the neuralgia is connected with an inflammatory action.

In toothache, a small piece of cotton saturated with the oil, and introduced into a carious tooth, is stated to be an efficacious remedy.

*Dose.*—1 to 5 minims.

## OLEUM CARYOPHYLLI.

### OIL OF CLOVE.

*Botany.*—A volatile oil obtained from the dried unexpanded flower buds of *Caryophyllus Aromaticus*, belonging to the Natural Order *Myrtaceæ*. The Myrtle Order. Cultivated in the East and West Indies, Mauritius, &c.

*Properties and Uses.*—Aromatic and stimulant.—In toothache a drop or two upon cotton, introduced into a carious tooth, is a popular remedy which occasionally affords relief.

## OLEUM CROTONIS.

## CROTON OIL.

*Botany.*—Expressed from the seeds of *Croton Tiglium*, a native of India and Ceylon, belonging to the Natural Order *Euphorbiaceæ*. The Euphorbium or Spurge wort Order.

*Physiological Effects and Therapeutics.*—This oil is a drastic cathartic, and very speedy in its action. It is given in doses of from half to three drops.

Being uncertain in its action it should be given with caution, and avoided in cases of extreme debility, and in inflammatory affections of the digestive organs. In neuralgia, tic douloureux, and sciatica, it is said by some to possess a specific power, apart from its purgative action; also in tic douloureux arising from dyspepsia.

Externally, as a counter-irritant it may be diluted with Olive Oil or Soap Liniment.

*Dose.*— $\frac{1}{3}$  to 2 minims in the form of pill, or placed on the tongue.

## OLEUM MORRHUÆ.

## COD LIVER OIL.

*Characters and Tests.*—Pale yellow, with a slight fishy odour, and bland fishy taste. A drop of sulphuric acid added to a few drops of the oil on a porcelain slab develops a violet colour, which soon passes to a yellowish or brownish-red.

*Preparation.*—The livers of the cod (*Gadus*

Morrhua) and others of the family *Gadidæ*, are obtained as fresh as possible, and submitted to careful inspection; the inferior ones being removed, the remainder are carefully cleaned, cut open, and washed two or three times in cold water. They are then exposed to a steam heat not exceeding 180°F. The oil rises to the surface, and is removed. In order to congeal and separate the more solid fat (margarine) it is exposed to a temperature of 50°F, and then filtered.

The darker varieties are obtained either at a higher temperature, or from livers in which putrefaction has made more or less progress. Chemical analysis lends no support to the opinion, at one time entertained, that the brown oil is superior as a therapeutic agent to the pale oil, for no substances have been discovered in the darker oil, which would confer on it superior activity as a medicine. The pale oil is more readily tolerated by the stomach.

*Physiological Effects and Therapeutics.*—In scrofulous and tubercular diatheses, and the various diseases in which these states of the constitution are manifested, Cod Liver Oil is a remedy from which we may, as a general rule, anticipate the greatest good. It is a valuable adjunct to arsenic, &c., in scrofulous affections of the joints and bones, and is a remedy on which much reliance may be placed.

In rachitis Dr. Bennett considers it the most efficacious of all remedies. Many forms of

neuralgia which resist quinine and other ordinary remedies, will sometimes yield to the plentiful ingestion of fat as an article of diet. Of these fatty remedies, cod liver oil holds the highest rank.

It should be administered immediately before or after meals, and may be given with orange wine, or a mixture containing tincture of orange, and a little phosphoric or nitric acid—in hot milk, or coffee, or in the form of capsule.

According to Dr. Ringer a little salt taken immediately before or after the oil, often removes the taste and prevents nausea.

*Dose.*—1 drm : to 1 ounce.

## O P I U M.

### OPIUM.

*Botany.*—Obtained from the *Papaver Somniferum*, an annual belonging to the Natural Order *Papaveraceæ*. The Poppy Order.

*General Characters.*—Irregular lumps, weighing from four ounces to two pounds; enveloped in the remains of poppy leaves, and generally covered with the chaffy fruits of a species of *rumex*; when fresh, plastic, tearing with an irregular, slightly moist, chestnut-brown surface, shining when rubbed smooth with the finger, having a most peculiar odour and nauseous taste.

*Preparation.*—The juice is obtained by in-

cisions from the unripe capsules of the opium poppy, collecting the exuded juice when con-  
creted into tears, and further inspissated by  
spontaneous evaporation.

*Physiological Effects and Therapeutics.*—In  
sciatica, tic douloureux, and other neuralgic  
affections, opium internally administered and  
locally applied, is occasionally of great ser-  
vice; but both these modes are far inferior to  
morphia hypodermically administered.

In toothache a piece of solid opium, or  
cotton saturated with the tincture or wine  
of opium, introduced into a carious tooth  
frequently affords relief.

In ptyalism, opium has been given inter-  
nally with the view of arresting the excessive  
discharge. A case is recorded where a patient  
was profusely salivated, every means had  
failed to diminish the flow of saliva, until  
opium (gr i every 4 hours) was given, when  
almost immediately a cessation of the ex-  
cessive secretion ensued.

Great caution should be observed in the  
administration of opium. It is interdicted in  
some diseases of the respiratory organs, &c.

Some persons are peculiarly susceptible to  
its action, and are unable to take even the  
smallest dose. Infants and children bear its  
exhibition badly, even two or three drops of  
the tincture have been known to produce a  
fatal result.

As a benumber or topical anodyne it is  
much inferior to aconite, hence in neuralgia  
the latter is greatly to be preferred.

## PAPAVERIS CAPSULÆ.

## POPPY CAPSULES.

*Botany.*—The nearly ripe dried capsules of the White Poppy, *Papaver Somniferum*, belonging to the Natural Order *Papaveraceæ*. The Poppy Order.

*Uses.*—Anodyne in fomentations. Two ounces to a pint and a half, boiled to one pint.

## PEPSINA.

## PEPSINE.

The digestive principle of the gastric juice of Mammalia. Obtained by digesting the mucous membrane of the sheep or pig in water at a temperature of 60°F., adding neutral Acetate of Lead. By means of Sulphuretted Hydrogen the lead is precipitated, the pepsine being held in solution, and obtained by evaporating the liquid at a temperature not exceeding 113°F.

*Characters.*—A light yellowish-brown powder, having a faint, but not disagreeable odour, and a slightly saline taste, without any indication of putrescence. Very sparingly soluble in water or spirit. It is decomposed at a temperature of 120°F., and then loses its digestive properties.

Mr. Oakley Coles recommends it as an agent capable of restoring to a healthy condition a suppurating pulp. The pepsine should be fresh, and made into a paste with water, containing two per centum of Hydro-

chloric Acid, it is then placed in contact with the diseased pulp, sealed with wax, and renewed every third day. He asserts that, after a few applications, the offensive secretion ceases, and the pulp assumes a healthy condition, the dead part having been digested.

## POTASSÆ BICARBONAS.

### BICARBONATE OF POTASH.

*Synonym.*—Acid Carbonate of Potassium.

*Formula.*—Old:  $\text{KO}, \text{HO}, 2\text{CO}_2$ . New:  $\text{KHCO}_3$ .

*Characters.* — Occurs in colourless right-rhombic prisms, which are not deliquescent, having a saline, feebly alkaline taste.

*Preparation.*—By passing carbonic acid gas through an aqueous solution of carbonate of potash until crystals of the bicarbonate are formed, these are washed with twice their bulk of cold water, drained and dried (on filtering paper) by exposure to the air.

*Physiological Effects and Therapeutics.*—An antacid and diuretic. A dilute solution of this salt is very serviceable as a mouth wash when acid medicines are being taken. Also by women during the period of pregnancy, when the secretions of the mouth are frequently found to be unusually acid.

It is very beneficial in glandular diseases, excessive enlargement of the lenticular and glandular papillæ at the base of the tongue; and is a valuable agent, either alone or in conjunction with iodide of potassium, in rheumatic tooth-ache.

## POTASSÆ CHLORAS.

### CHLORATE OF POTASH.

*Formula.*—Old:  $\text{KOCIO}_3$ . New:  $\text{KClO}_3$ .

*Characters.*—Colourless rhomboidal crystalline plates, with a cool saline taste, sparingly soluble in cold water.

*Preparation.*—Obtained by passing a stream of chlorine gas (generated by the action of hydrochloric acid on black oxide of manganese) through a solution of carbonate of potash and slacked lime; subsequently boiling, filtering, and evaporating to crystallization.

*Physiological Effects and Therapeutics.*—Diuretic and stimulant. It becomes absorbed into the blood, and is eliminated by the kidneys. It appears to act as a diuretic and refrigerant, like nitrate of potash.

The supposition that it yields oxygen to the system is probably an error, for it has been found in the urine in an unchanged condition.

In ulcerative and gangrenous stomatitis (cancrum oris) no internal remedy is more generally so effectual as chlorate of potash.

In ulcerative stomatitis, Dr. West states that he relies upon it almost exclusively, and that there seems to be no form nor stage of the affection in which it is not useful; marked improvement seldom fails to be observed in two or three days, and within ten days a cure is generally effected. Three grains administered in sweetened water every four hours

suffices for a child aged three years; 5 grains every four hours appears to answer as well as a larger dose for a child at eight or nine years. The bowels require to be regulated and the constitution supported.

*Inflammation of the Gums* (gingivitis) arising from teething will, according to Dr. West, generally yield to the chlorate, 2 grains every four hours for a child of one year.

Cases of *Phagedenic Ulceration, and of secondary syphilis* are recorded in which it was given, and a cure effected in a few weeks without the aid of mercury or iodine. To cachectic ulcerations, abraded surfaces, and in tonsillitis, the chlorate finely powdered, and locally applied, or in the form of a gargle, has proved very serviceable. In ptyalism it exercises a most beneficial influence.

## POTASSÆ HYPOPHOSPHIS.

### HYPOPHOSPHITE OF POTASH.

*Formula.*—Old:  $\text{KO}, \text{PO}, \text{PO}, 2\text{HO}$ .

New:  $\text{KPH}_2\text{O}_2$ .

*Characters.*—It is uncrystallizable, very deliquescent, soluble in water and alcohol, in nearly all proportions. When heated it evolves phosphuretted hydrogen and phosphorus, and is converted into phosphate of potash.

*Preparation.*—Obtained by adding carbonate of potash to solution of hypophosphite of lime as long as a precipitate of carbonate of lime is formed, then filtering and evaporat-

ing the solution to dryness, digesting the residue in alcohol (which dissolves the hypophosphite), and evaporating the filtered liquid to dryness in vacuo over sulphuric acid.

*Physiological Effects and Therapeutics.*—The medicinal properties are similar to those of hypophosphite of lime, which see.

## POTASSÆ NITRAS.

### NITRATE OF POTASH.

*Synonyms.*—Saltpetre—Nitre.

*Formula.*—Old:  $\text{KO}, \text{NO}_3$ . New:  $\text{KNO}_3$ .

*Characters.*—In white crystalline masses or fragments of striated six-sided prisms, colourless, and of a peculiar cool saline taste.

*Purification.*—The nitrate of potash employed in this country is obtained by the purification of the native nitres of India.

*Physiological Effects and Therapeutics.*—In moderate doses nitrate of potash acts as a refrigerant, diuretic and diaphoretic.

It has been recommended in threatened alveolar abscess, the pulp cavity of the carious tooth being filled with the powdered salt, and protected by cotton and wax or mastic.

In inflammatory sore throat it forms a useful ingredient in gargles.

*Dose.*—Five to twenty grains as a refrigerant and diuretic.

## POTASSÆ PERMANGANAS.

### PERMANGANATE OF POTASH.

*Formula.*—Old:  $\text{KO}, \text{Mn}, \text{O}_7$ . New:  $\text{K}, \text{Mn}, \text{O}_8$ .

*Characters.*—It occurs in the form of dark purple, slender, prismatic crystals, inodorous, with a sweet astringent taste, soluble in water.

*Preparation.*—Prepared from the black oxide of manganese with caustic potash, chlorate of potash, and dilute sulphuric acid.

*Physiological Effects and Therapeutics.*—Locally applied, in substance or strong solution, it acts as a stimulant and mild escharotic. It readily yields its oxygen to bodies having an affinity for that element, hence its great value as a deodorizer. It has been used with success in the treatment of foetid and gangrenous ulcers, abscesses, and wounds of all kinds: as an antiseptic to the pulps of teeth which have become disorganized; and it removes the foetor of breath, arising from local causes. It forms a useful gargle in ulcerated sore throat.

Applied in powder to a carious tooth it is said to cure odontalgia.

The stains of permanganate of potash are removed by dilute muriatic acid.

## POTASSII BROMIDUM.

### BROMIDE OF POTASSIUM.

*Synonym.*—Hydrobromate of Potash.

*Formula.*—KBr.

*Characters.*—Colourless cubical crystals without odour, having a pungent saline taste, and readily soluble in water, less in spirit.

*Preparation.*—By adding bromine gradually, and in slight excess, to solution of potash;

evaporating to dryness; reduce the residue to a fine powder, mix with wood charcoal, then fuse; lastly, dissolve the cooled salt in water, filter and crystallise.

*Physiological Effects and Therapeutics.* — Narcotic, anæsthetic, and sedative. In small doses or locally applied it rapidly and completely diminishes, for a time, the sensitiveness of the pharynx and velum palati, to such an extent that those parts may be tickled without exciting the least effort at deglutition. This circumstance has been taken advantage of in preparing patients for Laryngoscopic examinations and operations; and also in lessening the difficulty of taking large plaster casts of the mouth in cases of cleft palate, &c.

Some forms of neuralgia are effectually relieved by full doses of the bromide when other remedies have failed.

*Dose.*—Five to fifteen grains and upwards.

## POTASSII IODIDUM.

### IODIDE OF POTASSIUM.

*Formula.*—KI.

*Characters.* — Colourless cubical crystals which are generally opaque. They are readily soluble in water, less so in spirit.

*Preparation.*—Prepared in a similar manner to bromide of potassium, with solution of potash, iodine, and wood charcoal.

*Physiological Effects and Therapeutics.*—Its properties are closely analogous to those of iodine. Like it, it occasionally produces head-

ache, flushing of the face and gastric irritation; and when taken in too large doses, produces coryza, and in some cases salivation and emaciation of the testes and mammæ, but these effects are rare.

It often proves most serviceable in scrofulous affections. It has been found valuable in convulsions attendant on dentition, which amongst ill-fed children is often followed by hydrocephalus.

In syphilis the value of the iodide is universally recognised, but it is so in the secondary, and tertiary or constitutional forms of the disease only; in nodes, caries, and necrosis, and also in periostitis, it holds the first place in our list of remedies; and though its effects are not so immediately manifest, it exercises a no less certain influence on syphilitic affections of the skin. It may be given with great advantage in affections of the nervous system of syphilitic origin, and in syphilitic cachexia. The dose in *these* cases, upon the authority of Sir H. Thompson, may be from 30 to 75 grs.; and upon the authority of Berkeley Hill 120 grs. three times a day.

It proves of service in painful neuralgic affections, dependent upon an inflammatory state of the nerve coverings; it is more especially useful when the pains are increased at night and by the heat of bed.

In face-ache, partaking more of a rheumatic than a neuralgic character, Sir T. Watson found the iodide in doses of five to six grains produce a speedy and permanent cure.

Looseness of teeth, depending upon periostitis of the alveolar process, known by the great pain, swelling and sponginess of the gums, is often effectually cured by the iodide.

*Dose*.—Two to ten grains or more.

## PYRETHRI RADIX.

### PELLITORY ROOT.

*Synonym*.—Pellitory of Spain.

*Botany*.—The dried root of *Anacyclus Pyrethrum* belonging to the Natural Order *Compositæ*. The Composite Order. Imported from the Levant, Barbary and Spain.

*Characters*.—A fusiform root, about the length and thickness of the little finger, having a thick brown bark, studded with black shining points; breaks with a resinous fracture, and presents internally a radiated structure.

*Physiological Effects and Therapeutics*.—An energetic local irritant and sialogogue. Chewed, it causes pricking in the mouth, a flow of saliva and buccal mucus, and is said to relieve some rheumatic and neuralgic affections of the head and face; also paralysis of the tongue and muscles of the throat. In relaxation of the throat and uvula it is employed in the form of gargle. Pellitory is not given internally.

The tincture is used to relieve tooth-ache.

## PYROXYLIN.

### PYROXYLIN OR GUN COTTON.

*Characters*.—Has the appearance of ordi-

**Nary** cotton, is highly electric on friction, insoluble in water. It explodes at a temperature of 300°F leaving no carbonaceous residue. If the explosion be conducted on litmus paper the latter is reddened. If on starch paper, moistened with iodide of potassium, the nitrous acid formed sets free the iodine, and produces the blue iodised starch.

It is readily soluble in a mixture of ether and rectified spirit, forming collodion.

*Preparation.* — By immersing cotton in equal parts by measure of sulphuric and nitric acid, washing until the filtrate ceases to give a precipitate with chloride of barium, and then draining the product on filtering paper, and drying at a temperature not exceeding 212°F.

*Uses.* — Used in the preparation of collodion.

## QUININÆ HYPOPHOSPHIS.

### HYPOPHOSPHITE OF QUINIA.

*Formula.* —  $C_{10}N_2H_{14}O_4POHO \times 2HO$ .

*History and Characters.* — It was first prepared under the direction of Dr. Churchill by Swann of Paris in 1856. As prepared by him this salt is an amorphous substance of honey-like colour, very soluble and deliquescent, of an intensely bitter taste. It has the consistence of soft wax, takes fire when heated, and burns like resin. This is a different compound from that met with in the trade under the same name, which is obtained by double decomposition between hypophos-

phite of lime or baryta and sulphate of quinine. It is in white needles and is most frequently an impure product, consisting of a mixture of hypophosphite of quinine, sulphate of quinine, sulphate of lime or baryta. Dr. Churchill says the only preparation fit for medicinal purposes is that prepared by Swann.

*Preparation.*—By dissolving the alkaloid quinia in hypophosphorous acid, or by decomposing sulphate of quinia with hypophosphite of baryta, filtering and evaporating the solution.

*Physiological Effects and Therapeutics.*—It has a lower activity than the other hypophosphites, which is easily accounted for by the small proportion of acid it contains. And in cases where the hypophosphites are indicated, this preparation is useful when the other salts are found too active.

One grain of hypophosphite of quinine is equal to rather more than  $\frac{1}{30}$  of a grain of phosphorus.

Dr. Churchill believes the hypophosphite of quinine will in time be looked upon as the most efficient preparation of this alkaloid.

In the first teething of children he seems to give preference to the lime preparation of the hypophosphites, and speaks of it producing an *heroic* effect, and, if properly used, will act as a preservative agent against all the accidents of this difficult period of life. When given to teething children who are pale, peevish, sad, emaciated, without appe-

site or strength, suffering from fever and diarrhoea, loss of sleep, and apparently in imminent danger of convulsions, he has never seen a single case where the whole of these symptoms have not yielded to a few doses of the syrup, and the evolution of the teeth afterwards proceed as in perfect health.

## QUINIAE SULPHAS.

### SULPHATE OF QUININE.

*Formula.*—Old :  $C_{40}H_{24}N_2O_4HO,SO_3 \times 7HO$ .

New :  $(C_{40}H_{24}N_2O_4)_2H_2SO_4,7H_2O$ .

*Characters.*—Filiform silky snow-white crystals of a pure intensely bitter taste, sparingly soluble in water, yet imparting to it a peculiar bluish tint; dissolves readily in diluted sulphuric acid.

*Preparation.*—Prepared from the yellow Cinchona Bark, which is exhausted by maceration and percolation with diluted hydrochloric acid. The solution so obtained is treated with a slight excess of solution of soda; the precipitated quinia is washed, and then very nearly dissolved in diluted sulphuric acid; a neutral liquid is thus obtained which is filtered, concentrated, and crystallised. The crystals should be dried on filtering paper without heat.

*Physiological Effects and Therapeutics.*—A valuable tonic and anti-periodic, possessing in an eminent degree the properties for which cinchona has been justly celebrated.

In tic-douloureux and other neuralgic affec-

tions, it holds a foremost place in our list of remedies. In neuralgia of malarial origin, there can be no doubt of the value of quinine. It may be given in full doses (gr. 5 to 20) shortly before the time at which the attack of pain is expected, but if after three or four doses a decided improvement is not effected, the probability is great that the neuralgia is not malarial. In a certain number of non-malarial cases also, quinine produces a good effect, when gr. 2 to 3 thrice daily is the largest quantity which is likely to be of any use.

In cancrum oris, when the constitution requires tonics and stimulants in order to support the strength, Dr. Graver strongly recommends quinine.

In aphthous ulcerations and scurvy, where the constitution is much debilitated, it is highly serviceable.

When the bitter taste is objectionable, as in the case of young children, amorphous quinine, which is insoluble in saliva, but readily so in gastric juice, may be advantageously substituted, and even when given to adults in large doses, it is perhaps better to give it in suspension, as the bitterness is not then so intense.

## SANDARACH.

### JUNIPER RESIN.

*Botany.*—A resin obtained from the Callitris Quadrivalvis, a plant belonging to the

natural order *Pinaceæ* or *Conifera*. The Pine order. French Sandarach is the commercial name of the resin of the *Pinus Dammara*.

*Uses*.—It is used as a substitute for mastic. Dissolved in spirits of wine (methylated) it is useful as a varnish for plaster models. It is desirable to make the surface very hard, dilute some of the varnish with spirit (to render it more easy of absorption) and apply several coats until a smooth surface be obtained.

## SAPO DURUS.

### HARD SOAP.

Prepared by boiling olive oil with a solution of soda till the whole forms a thick viscid solution. The alkali is added gradually, and when saponification is complete, the soap is separated from the excess of alkali, the glycerine, and the superfluous water by the addition of common salt.

The soap rises to the surface, and is ladled off into moulds, where it is stirred to promote the separation of the liquid.

It is an antacid, and on that account is often introduced into tooth powders.

Dissolved in methylated spirit, it forms an excellent varnish for plaster models in casting sites.

## SINAPIS.

### MUSTARD.

*Botany*.—The seeds of *Sinapis Alba* and

*Sinapis Nigra*, belonging to the Natural Order *Cruciferae*. The Cruciferous or Cabbage order.

*Characters*.—Small round seeds, yellow inside. Those of *S. Alba* are yellow outside, those of *S. Nigra* are black and somewhat smaller.

*Chemistry*.—Its activity is due to the essential oil, produced from the black mustard by the mutual action of myronate of potassium and myrosin in the presence of water.

*Physiological Effects and Therapeutics*.—In small doses it is a stimulant. In doses of from one to three teaspoonsful it is an efficacious emetic, effectually clearing out the stomach without producing any great amount of subsequent depression. Externally applied in the form of poultice, it is irritant, and if left in contact with the skin for a long period causes vesication.

In inflammation of the tonsils, sinapisms to the throat are very useful.

In tooth-ache, face-ache, and neuralgic affections of the head and face, a sinapism over the seat of pain often affords great relief.

Mustard leaves are an excellent substitute for the ordinary mustard poultice, being cleanly and more convenient.

## SPIRITUS ETHERIS NITROSI.

### SPIRIT OF NITROUS ETHER.

*Synonym*.—Sweet Spirits of Nitre.

A spiritous solution containing Nitrous ether (Nitrite of Ethyl).  $C_2H_5ONO$ , or  $C_2H_5NO$ .

*Characters.*—Transparent and nearly colourless, with a very slight tinge of yellow, volatile, inflammable, of a peculiar penetrating apple-like odour, and sweetish cooling sharp taste. Sp. grav. 0.845. Should not effervesce with Bicarbonate of Soda.

*Preparation.*—Prepared by distilling at a temperature between  $170$  and  $180^\circ$ , a mixture of nitric acid, sulphuric acid, and rectified spirit.

*Physiological Effects and Therapeutics.*—Refrigerant, diuretic, and diaphoretic. It is chiefly used as an adjunct to other remedies of the same class. To obtain its diaphoretic and refrigerant effects, it is best combined with liquor ammoniæ acetatis; to obtain its diuretic action, with squill, &c.

*Dose.*—Half to two drachms.

## SEPIA OFFICINALIS.

### COMMON CUTTLE FISH.

*Natural History.*—Belonging to the class Cephalopoda—Cephalopods. A class of mollusks which have the body inclosed in a bag (mantle). Head protruding from the bag. The substance called os sepia, or cuttle-fish bone, is an oval or oblong calcareous bone (sometimes termed shell) deposited in the mantle of the animal.

*Characters and Uses.*—Os Sepia has a cellular texture, and is so light as to float on

water; when dried and ground into powder it constitutes *pounce*. It enters into the constitution of tooth powders. It is employed for several purposes in the arts, for polishing, for forming moulds for silver castings, &c.

## STRYCHNOS NUX VOMICA.

### NUX VOMICA.

*Synonyms*.—Koochla, or Poison Nut Tree.

*Botany*.—The seeds of *Strychnos Nux Vomica* belonging to the Natural Order, *Loganiaceæ*. The *Spigelia* or *Strychnos* order. Growing in and imported from the East Indies.

*Characters*.—The seeds are nearly circular, about an inch in diameter, flat, or very slightly convex on the dorsal surface, and concave on the other or ventral surface, and are usually surrounded by a filiform annular stria. In the centre of the ventral surface is the rounded hilum or umbilicus.

*Physiological Effects and Therapeutics*.—The seeds and the bark are powerful stimulants of the nervous system and spinal cord. Their activity resides in the alkaloids strychnia and brucia. In large doses it causes twitching of the muscles, followed by tetanic rigidity and death from asphyxia; paralysed parts are more readily affected than those which are sound. It is much used in the treatment of paralysis, more especially when depending on lead poisoning: also in mer-

curial paralysis, and in that resulting from rheumatism. It has been used in neuralgia with good effect.

Some constitutions are peculiarly susceptible to its action; hence it should always be commenced with the smallest doses, and gradually and cautiously increased, its effects being carefully watched.

Muscular stiffness or convulsive twitchings in the extremities is a certain indication that the remedy has been carried to its full extent, and should at once be discontinued. During its exhibition the use of tobacco should be abandoned, its operation on the system being antagonistic.

*Dose*.—Tincture of Nux Vomica, 5 to 20 minims; strychnine,  $\frac{1}{30}$  of a grain.

*Antidotes*.—Evacuate the contents of the stomach. Infusion of tobacco; extract of conium; hydrate of chloral.

## SIPHONIA ELASTICA.

### ELASTIC GUM.

*Synonyms*.—Caoutchouc, or India Rubber.

*Botany*.—A concrete juice obtained by incisions from the *Siphonia Elastica*, a plant belonging to the Natural Order, *Euphorbiaceæ*. The Euphorbium or Spurge Family. A native of Brazil and Guiana. Nearly all the India rubber used in this country is obtained from this and other species.

The substance called vulcanized India Rubber is a compound of sulphur and caout-

chouc combined by the agency of heat; by a protracted and increased heat this is converted into a horny substance, called vulcanite.

*Solvents.*—Æther (washed), benzine, chloroform, tar, naphtha, &c.

## SODÆ BIBORAS.

### BIBORATE OF SODA.

*Synonym.*—Borax.

*Formula.*—Old:  $\text{Na}_2\text{O}, 2\text{BO}_3, \times \text{HO}$ .

New:  $\text{Na}_2\text{B}_4\text{O}_{10}, 10\text{H}_2\text{O}$ .

*History.*—It is imported from the East Indies, where it occurs in a native state, under the name of Tincal.

*Characters.*—In transparent colourless crystals, soluble in water, still more so in glycerine, insoluble in spirit. It has an alkaline reaction; when in solution it absorbs carbonic acid; dissolves fibrine, albumen, casein and uric acid.

*Preparation.*—It is made artificially in Tuscany, by boiling together in proper proportions boracic acid and carbonate of soda.

*Physiological Effects and Therapeutics.*—Refrigerant, diuretic, and emmenagogue. Its action is very similar to that of carbonate of soda. Its curative properties in apthous affections are very questionable; its mild alkaline qualities may improve the condition of the skin and mucous surfaces.

*Other Uses.*—Plaster casts may be rendered extremely hard by its use, thus: thoroughly

dry the cast, then immerse it for a few minutes in a solution of borax in boiling water, and set aside to cool. It is also employed as a flux in fusing and soldering metals.

## SODÆ BICARBONAS.

### BICARBONATE OF SODA.

*Synonyms.*— Acid Carbonate of Sodium, Sesquicarbonate of Soda.

*Formula.*—Old:  $\text{NaO}, \text{HO}, 2\text{CO}_2$ .

New:  $\text{NaHCO}_3$ .

*Preparation.*—By passing carbonic acid gas into a mixture of carbonate and dried carbonate of soda until it is no longer absorbed. The damp salt formed is then shaken with half its weight of distilled water, the insoluble portion is drained, and dried, by exposure to the air.

*Physiological Effects and Therapeutics.*—Neuralgia connected with acidity of the stomach is often speedily relieved by a full dose of the carbonate of soda. Aphthæ in children is often relieved by a few doses in combination with a little rhubarb. A small portion put into a carious tooth often relieves toothache.

It is very useful in neutralising the acid secretion of the mouth, whether arising from pregnancy or other causes. It is also a desirable adjunct to tooth powders.

## SODÆ HYPOPHOSPHIS.

## HYPOPHOSPITE OF SODA.

*Formula.*—Old:  $\text{NaO}, \text{PO}_2\text{HO}$ .

New:  $\text{NaH}_2\text{PO}_2$ .

*Characters.*—It is very soluble both in alcohol and water, and when carefully evaporated may be obtained in prismatic crystals which are very deliquescent.

*Preparation.*—This salt is prepared by adding carbonate of soda in solution, to solution of hypophosphite of lime as long as a precipitate is formed, separating the soluble hypophosphite of soda from the precipitate, and evaporating the former to dryness; digesting in alcohol, which dissolves the hypophosphite, and evaporating carefully in vacuo to crystallization. It is said to be subject to explosion if much heat be applied in the evaporation, evolving phosphuretted hydrogen.

*Physiological Effects and Therapeutics.*—Its medicinal properties are similar to those of hypophosphite of lime, which see.

## SODÆ PHENAS.

## PHENATE OR CARBOLATE OF SODA.

*Formula.*— $\text{NaC}_6\text{H}_5\text{O}$ .

*Characters.*—A soapy mass of indistinct crystals, or in tufts of acicular crystals, more

or less of a pinkish white colour, these melt to an oil when heated. Readily decomposed. Insoluble in Soda-ley; dissolves in creosote, forming a thick mass; soluble in water and carbolic acid.

*Preparation.*—May be obtained by mixing caustic soda with carbolic acid and a little water, and evaporating. It is met with in commerce in solution of a definite strength; it is this form in which it is usually used.

*Physiological Effects and Therapeutics.* — Hæmostatic, antiseptic, and disinfectant; it is highly recommended as an astringent and styptic application to check excessive bleeding after tooth extraction, and prevent subsequent soreness of the gum. It causes rapid absorption of the extravasated blood, thereby preventing foetor of the breath, and facilitates the speedy closing, healing, and hardening of the gum.

It is said to relieve almost magically the *after-pains* of extraction. It may be applied upon cotton, over and around the alveolus, but so placed as not to interfere with the closure of the cavity by the clot, and the kind and prompt healing likely to result from its retention. It is preferable to the ferruginous preparations as a hæmostatic; it is not escharotic but sedative and antiphlogistic in its action. As a mouth wash it is highly recommended in cases of soft, spongy, or swollen gums, which bleed at the slightest touch. Used of various degrees of strength from its full strength to 1 in 12 of water.

## THYMOL.

## THYMOL.

*Formula.*— $C_{10}H_{14}O$ .

*Botany.*—Thymol occurs together with Thymene and Cymene in the volatile oil of the *Thymus Vulgaris*, or Common Thyme, a member of the natural order *Labiata* or *Lamiaceæ*. The *Monarda Punctata*, or Horse Mint, belonging to the same order, likewise contains it, as does also the *Ptycholes Ajowan*, an East Indian plant belonging to the order, *Umbellifera*.

*Characters.*—In transparent rhomboidal plates, having the odour of Thyme, soluble in water, slightly deliquescent and having a peppery taste.

*Preparation.*—Sometimes it crystallises out spontaneously from the oil. It may be separated by agitating the oil Thyme with solution of soda, and supersaturating the alkaline liquid with hydrochloric acid.

*Physiological Effects and Therapeutics.*—Stimulant to capillaries, also useful in peripheral neuralgia. It arrests putrefaction of animal matters.

## ZINCI CHLORIDUM.

## CHLORIDE OF ZINC.

*Formula.*—Old:  $ZnCl$ . New:  $ZnCl_2$ .

*Characters.*—A white crystalline semi-transparent mass, rapidly absorbing water if ex-

posed to the air; soluble in rectified spirit, æther, and water.

*Preparation.*—Obtained by the action of hydrochloric acid on granulated zinc, purifying the solution by the addition of solution of chlorine, evaporating to a proper consistence, and poured into moulds to solidify.

*Uses.*—A valuable escharotic to sensitive dentine, but, except in cases where rapidity of action is needed, carbolic acid is preferable, in consequence of the severe dull pain caused by its application.

It is an excellent agent applied to teeth denuded of their enamel. Properly diluted it is a valuable disinfectant.

## ZINCI SULPHAS.

### SULPHATE OF ZINC.

*Synonym.*—White Vitriol.

*Formula.*—Old:  $\text{ZnOSO}_4 \times 7\text{HO}$ .

New:  $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ .

*Characters.*—In colourless transparent prismatic crystals, with a strong metallic styptic taste, freely soluble in water, and insoluble in alcohol.

*Preparation.*—Obtained by dissolving granulated zinc in dilute sulphuric acid, purifying the solution by means of chlorine and carbonate of zinc, evaporating and crystallizing.

*Physiological Effects and Therapeutics.*—Tonic, astringent, and anti-spasmodic, in doses of one grain, gradually increased. In doses of 10 to 20 grains it proves emetic,

acting promptly and effectually, leaving little subsequent depression. In cynanche tonsillaris, when the abscess is so situated that it cannot be opened by the lancet, it has been proposed as an emetic, for under the exertion of vomiting the abscess will often burst, and for this purpose none is better than sulphate of zinc. In gangrene of the mouth in children, this agent (20 grains) well incorporated with honey (1 ounce) forms a very useful topical application.

#### NITROUS-OXIDE.—HISTORICAL CORRECTION.

Passing over the experiments of Sir H. Davy, we come to the 10th December, 1844, when at a Scientific Lecture by Dr. Colton, the anæsthetic properties of this gas were observed by Horace Wells. A few weeks afterwards Wells exhibited it at a hospital at Boston, U.S. In March, 1847, he wrote a pamphlet thereon. Surgical cases are reported in the Medical and Surgical Journals, 1847 and 1848, in which he administered the gas. Wells visited Europe in 1847—he died in New York on the 24th January, 1848, aged 33.

At a meeting of the Medico-Chirurgical Society of Edinburgh, held November 10th, 1847, Sir J. Y. Simpson read a paper in which he alluded to the use of Nitrous Oxide in surgical operations, and made mention of its use by several American practitioners in the years 1833-4-46.

After Wells' decease, Colton for years tried unsuccessfully to induce Dentists to adopt it; but in 1863 Smith of New Haven, Connecticut, operated while Colton gave the gas.

In 1864, Mr. S. Lee Rymer tried to introduce it into England.

Dr. Colton visited Paris in 1867, and induced Dr. Evans to adopt it. The same year Dr. Evans came to England with a view to its introduction here. The following year Dr. Colton visited England, and at the house of Mr. C. J. Fox administered the gas to several persons in the presence of a number of professional gentlemen.

It was prepared in a condensed form by Mr. Barth, and subsequently in the liquid form by Mr. Coxeter, at the suggestion of Mr. Fox.

# ANTIDOTES TO THE PRINCIPAL POISONS.

*Acids, mineral.*—Calcined magnesia, carbonate of magnesia, chalk; a dilute solution of carbonate of soda; in an emergency, soap-suds.

*Acids, vegetable.*—As above.

*Alkalies and their carbonates.*—Vinegar and water; oil.

*Ammonia and its carbonate.*—Vinegar and water; oil.

*Antimony, Chloride of.*—Magnesia, carbonate of soda.

*Arsenious Acid and the soluble Arsenites.*—No certain antidote. Hydrated oxide of magnesia; magnesia in a state of fine division; the hydrated sesqui-oxide of iron; and powdered charcoal may be given. Also a mixture of oil and lime water.

*Baryta and its soluble salts.*—Sulphate of magnesia or sulphate of soda.

*Baryta, carbonate of.*—Sulphate of magnesia mixed with weak vinegar.

*Copper, soluble salts of.*—White of egg, milk, or flour and water.

*Hydrocyanic Acid.*—After cold affusion, the mixed oxides of iron diffused through water; ammonia.

*Iron, sulphate of.*—Carbonate of soda, or carbonate of ammonia.

*Lead, soluble salts of.*—Sulphate of soda or magnesia.

*Lead, carbonate of.*—Sulphate of magnesia with vinegar and water.

*Lime.*—Vinegar and water.

*Mercury, soluble salts of.*—White of egg; flour and water.

*Muriatic Acid.*—See acids, mineral.

*Nitric Acid.*—See acids, mineral.

*Opium and its preparations.*—No antidote. Treatment by emetics, the stomach pump, cold affusion, electro-magnetism; the patient to drink freely of strong coffee.

*Oxalic Acid and the soluble Oxalates.*—Common chalk, whiting, prepared chalk, or compound chalk powder.

*Phosphorus.*—No antidote. Magnesia diffused through water, or suspended in mucilage, may be given with advantage.

*Potash and its carbonates.*—Vinegar and water; oil.

*Silver, Nitrate of.*—Solution of common salt.

*Soda and its carbonates.*—Vinegar and Water; oil.

*Sulphuric Acid.*—See acids, mineral.

*Tartar Emetic.*—Tincture of bark, kino, or catechu; decoction of cinchona, or of oak bark; strong tea.

*Zinc, Sulphate of.*—Milk, magnesia, or a dilute solution of carbonate of soda.

DEFINITIONS OF TERMS DENOTING THE PROPERTIES OF REMEDIAL AGENTS.

*Alterative*.—Re-establishing gradually the healthy functions, secretions, &c.

*Anæsthetic*.—Power of suspending consciousness and producing insensibility to pain.

*Anodyne*.—Allaying pain.

*Antacid*.—Counteracting acidity.

*Antiperiodic*.—Preventing the recurrence of periodic diseases.

*Antiphlogistic*.—Diminishing fever and inflammation.

*Antiscorbutic*.—Curing or preventing scurvy.

*Antiscrofulic*.—Tending to prevent and cure scrofula.

*Antiseptic*.—Counteracting a putrescent tendency.

*Astringent*.—Contracting organic texture.

*Cauterant*.—Searing or destroying flesh.

*Counter-irritant*.—An irritant applied to one part to relieve disease in another part.

*Deobstruent*.—Removing obstructions.

*Desiccant*.—Drying up moisture or humours.

*Detergent*.—Removing impurities, cleansing.

*Diaphoretic*.—Producing perspiration.

*Diluent*.—A drink which simply dilutes the various liquids of the body.

*Discutient*.—Dispersing or repelling morbid swellings.

*Disinfectant*.—Destroying the causes of infection.

*Emollient*.—Softening, soothing.

*Epispastic*.—Irritating, blistering.

*Errhine* —Exciting nasal discharges.

- Escharotic*.—Searing or destroying flesh.
- Expectorant*.—Promoting mucous discharges from the air passages.
- Febrifuge*.—Allaying fever.
- Hæmostatic*.—Arresting the flow of blood.
- Hypnotic*.—Inducing sleep or stupor.
- Irritant*.—Exciting soreness and inflammation.
- Laxative*.—Producing gentle action of the bowels.
- Narcotic*.—Inducing sleep or stupor.
- Nervine*.—Relieving disorders of the nerves.
- Refrigerent*.—Cooling, mitigating heat.
- Resolvent*.—Allaying inflammation and dispersing morbid swellings.
- Restorative*.—Bringing back the natural functions.
- Revulsive*.—Acting by producing irritation in one part to divert diseased action from another.
- Rubefacient*.—Exciting superficial irritation.
- Sedative*.—Diminishing vital actions.
- Sialogogue*.—Stimulating the secretion of saliva.
- Soporific*.—Inducing sleep.
- Spinant*.—Acting upon the spinal marrow.
- Stimulant*.—Exciting or increasing vital action.
- Styptic*.—Arresting hæmorrhage.
- Sudorific*.—Causing sweating.
- Suppurant*.—Producing suppuration.
- Tonic*.—Producing a permanent increase in the tone or vigour of the system.
- Vesicant*.—Producing blisters.
- Vulnerary*.—Favouring the healing of wounds.

*DENTAL*

PHARMACOPŒIA.

*The initials following the names of the preparations indicate the source of the respective formulæ.*

**B. P..... British Pharmacopœia.**

**J. S..... James Stocken.**

**T. H..... Throat Hospital Pharmacopœia.**

**S. S. W... White's Materia Medica.**

**K. & W... Kempton & Williams.**

**C. H..... Chest Hospital.**

**C. .... Oakley Coles.**

*DENTAL*  
**PHARMACOPŒIA.**

---

**Acidum Sulphuricum Arom:  
c Acido Tannico.**

Tannic Acid added to Aromatic Sulphuric Acid  
to saturation.

A powerful styptic.

**Chloral Camphorata.**

Rx Chloralis Hydratis .....  
Camphoræ ..... p. æq:

*Misce.*

An external application in Neuralgia.

**Collodium c Cantharide.**

(M. OTTINGER).

Rx Ætheris Cantharidis .....  
Collodii ..... p. æq.

*Misce.*

Counter-irritant and vesicant. For children,  
one part former to two of latter. In periodon-  
titis, applied to the gum about the root of tooth  
affected; the gum having been previously care-  
fully dried.

**H**

**Collodium Flexile.**

(B. P.).

R	
Collodii .....	3vi
Balsami Canadensis .....	gr. 120
Olei Ricini .....	3i

**Misce.**

To be kept in well stoppered bottles

Preferable to simple collodion, not being so liable to crack.

**Collodium Stypticum.**

(DR. RICHARDSON).

To a saturated solution of Tannic Acid in Alcohol and Ether, (equal parts) as much pyroxylin (gun-cotton) is added as the liquid will dissolve. Styptic to cuts, &c.

**Dentifricium Antisepticum.**

R	
Acidi Carbolici .....	m. xxx
Pulveris Ossis Sepiæ .....	3ii
Pulveris Radicis Iridis .....	3ii
Cretæ Præcipitatae .....	3iii
Olei Caryophylli .....	gtt. iii

**Misce.**

**Dentifricium Astringens.**

(J. S.)

R	Cretæ Præcipitatæ .....	℥ii
	Pulveris Ossis Sepiæ .....	℥ii
	Acidi Tannici ..... gr.	xxx
	Olei Caryophylli ..... gtt.	iii

*Misce.***Dentifricium Communis.**

(J. S.)

R	Cretæ Præcipitatæ ... ..	℥xii
	Magnesiæ Calcinatæ .....	℥ii
	Pulveris Saponis Albæ .....	℥iv
	Pulveris Cinchonæ Flavæ.....	℥iv
	Pulveris Ossis Sepiæ .....	℥i
	Pulveris Aluminis Usti .....	℥ii
	Otto Rosæ ..... min.	viii
	Olei Caryophylli ..... min.	vi

*Misce.***Dentifricium Quinæ.**

R	Quinæ Disulphatis .....	gr. iv
	Pulveris Ossis Sepiæ .....	℥iv
	Cretæ Præcipitatæ .....	℥iv
	Otto Rosæ ..... gtt.	iv

*Misce.*

**Dentifricium Saponis.**

R	Cretæ Præcipitatæ .....	ʒiv
	Pulveris Saponis Albæ .....	ʒii
	Pulveris Ossis Sepiæ .....	ʒiv
	Otto Rosæ .....	gtt. iv

*Misce.***Gargarismæ.**

The term "*gargle*" has been applied to all washes for the mouth, as well as to those for the throat; such being a better term than that of lotion, which is generally understood to be an external remedy.

**Gargarisma Acidi Carbolici.**

(T. H.)

R	Acidi Carbolici .....	m xx
	Glycerini .....	ʒiv
	Aquæ .....	ad. ʒx

*Misce.*

Stimulant and Antiseptic.

**Gargarisma Acidi Carbolici Fort.**

(J. S.)

R	Acidi Carbolici ..	ʒi
	Glycerini .....	ʒiv
	Aquæ .....	ad. ʒx.

*Misce.*

Stimulant and Antiseptic.

**Gargarisma Acidi Carbolici c Iodo.**

(BOULTON).

R	Tincturæ Iodi Compositæ ...m	45
	Acidi Carbolici.....m	vi
	Glycerini .....	3i
	Aquæ Distillatæ .....	ad 3v

*Misce.*

Stimulant and Antiseptic.

**Gargarisma Acidi Gallici c Chloro.**

R	Acidi Gallici .....	gr. 40
	Liquoris Sodæ Chlorinatæ.....	3ii
	Glycerini .....	3ii
	Aquæ Distillatæ .....	ad. 3viii

*Misce.*

In Tonsillitis, &amp;c.

Astringent and Antiseptic.

**Gargarisma Acidi Hydrochlorici.**

(T. H.)

R	Acidi Hydrochlorici Diluti ...	3ii
	Glycerini .....	3iv
	Aquæ Distillatæ .....	ad. 3x

*Misce.*

Stimulant.

**Gargarisma Acidi Tannici.**

(T. H.)

R    **Acidi Tannici** .....50 ad. 200gr.  
       **Spiritus Rectificati**..... 5i  
       **Aquæ Distillatæ** .....ad. 3x

*Misce.***Astringent.****Gargarisma Aluminis.**

(T. H.)

R    **Pulveris Aluminis** .....gr. 80  
       **Aquæ Distillatæ**..... ... 3x

*Misce.***Mild astringent.****Gargarisma Aluminis c Acido  
Tannico.**

(T. H.)

R    **Pulveris Aluminis** .....gr. 60  
       **Acidi Tannici** .....gr. 80  
       **Aquæ Distillatæ** ..... 3x

*Misce.***Astringent.****Gargarisma Aluminis et Potassæ  
Chloratis.**

R    **Pulveris Aluminis** ..... 3ii  
       **Potassæ Chloratis** ..... 3ii  
       **Aquæ Distillatæ** .....ad. 3x

*Misce.***Refrigerant and Astringent.**

**Gargarisma Arnicae.**

R	Tincturæ Arnicae .....	3ii
	Glycerini .....	3il
	Aquæ Rosæ .....	3ii
	Aquæ Distillatæ .....	ad. 3x

*Misce.*

Stimulant.

**Gargarisma Boracis.**

(S. S. W.)

R	Sodæ Biboracis .....	gr. 40
	Glycerini .....	3i
	Aquæ Distillatæ .....	ad. 3iv

*Misce.*

Mild alkaline astringent. In inveterate cracked tongue.

**Gargarisma Boracis c Myrrhā<sup>A</sup>.**

(T. H.)

R	Sodæ Biboracis .....	3iv
	Glycerini .....	
	Tincturæ Myrrhæ.....	aa 3ss
	Aquæ Distillatæ .....	ad. 3x

*Misce.*

Alkaline Astringent.

**Gargarisma Calendulæ.**

R

Tincturæ Calendulæ ..... 3iv

Aquæ Distillatæ .....ad. 3x

*Misce.*

Discussant.

**Gargarisma Chlorig.**

(J. S.)

R

Liquoris Chlorig ..... 3iv

Mellis ..... 3iv

Aquæ Distillatæ .....ad. 3x

*Misce.*

Antiseptic.

**Gargarisma Hydrargyri Perchloridi.**

(T. H.)

R

Liquoris Hydrargyri Per-

chloridi ..... 3v

Glycerini ..... 3iv

Aquæ Distillatæ .....ad. 3x

*Misce.*

Stimulant. Used in ulcerous and cachectic affections of the throat and mouth.

**Gargarisma Krameriae.**

(T. H.)

R

Radice Krameriae Contusæ ... ʒiv

Aquæ Distillatæ (100 F) ..... ʒx

Infuse one hour and strain.

Mild astringent.

**Gargarisma Potassii Bromidi.**

(T.H.)

R

Potassii Bromidi ..... gr. 100

Aquæ Distillatæ ..... ʒx

*Misce.*

Sedative.

**Gargarisma Potassæ Chloratis.**

(T. H.)

R

Potassæ Chloratis ..... ʒiv

Aquæ Distillatæ ..... ʒx

*Misce.*

Antiseptic. In aphthous and secondary syphilitic affections of the mouth, fauces and tongue; also in cases of salivation.

## Gargarisma Potassæ Chloratis c̄ Arnica.

(J. S.)

R	Potassæ Chloratis .....	3ii
	Sodæ Biboracis .....	3i
	Potassæ Nitratis .....	3ss
	Tincturæ Arnicae .....	3ii
	Aquæ Rosæ.....ad.	3vii

*Misce.*

Asstringent and Antiseptic. In gingivitis and general irritation of the mouth.

## Gargarisma Potassæ Chloratis et Boracis.

(J. S.)

R	Potassæ Chloratis .....	5ii
	Sodæ Biboracis .....	3i
	Potassæ Nitratis .....	3ss
	Aquæ Distillatæ.....	3viii

*Misce.*

Antiseptic and refrigerant.

## Gargarisma Potassæ Perman- ganatis.

(T. H.)

R	Solutionis Potassæ Perman- ganatis .....	3i
	Aquæ Distillatæ.....	3x

*Misce.*

Antiseptic.

**Gargarisma Sodæ Chloratæ.**

R	Solutionis Sodæ Chloratæ.....	℥ss
	Mellis .....	℥ss
	Aquæ Distillatæ... ..ad.	℥x

*Misce.*

Disinfectant. Used in mercurial ptyalism.

**Gargarisma Sodæ Hyposulphitis.**

(J. S.)

R	Sodæ Hyposulphitis .....	℥ii
	Syrupi Aurantii .....	℥iv
	Aquæ Distillatæ .....	ad. ℥iv

*Misce.*

Stimulant and antiseptic. In parasitic formations, aphthous ulcers, &c., and diphtheritic conditions.

**Gargarisma Zinci Chloridi.**

R	Zinci Chloridi.....gr.	1 ad. 5
	Mellis .....	℥i
	Aquæ Distillatæ .....	ad. ℥i

*Misce.*

Disinfectant.

**Glycerinum Acidi Carbolici.**

(B. P.)

R	Acidi Carbolici .....	℥i
	Glycerini .....	℥iv

*Misce.*

Mild Escharotic.

**Glycerinum Acidi Tannici.**

(B. P.)

R		
	Acidi Tannici .....	3iv
	Glycerini .....	3ii

*Misce.*

Powerful Astringent.

**Glycerinum Boracis.**

(B. P.)

R		
	Sodæ Biboracis .....	3i
	Glycerini .....	3vi

*Solve.*

Mild Alkaline Astringent.

**Glycerinum Potassæ Chloratis.**

(S. S. W.)

R		
	Potassæ Chloratis .....	3i
	Glycerini .....	3x

*Solve.*

Antiseptic. For ill conditioned ulcers and wounds.

**Glycerinum Sodæ Sulphitis.**

(S. S. W.)

R		
	Sodæ Sulphitis.....	3i
	Glycerini .....	3i

*Solve.*

In aphthous ulcers.

**Guttæ Anodynæ.**

(J. S.)

R	Morphiæ Acetatis .....	gr. 120
	Acidi Tannici .....	gr. 160
	Gummi Mastichi .....	ʒi
	Spiritus Rectificati .....	ʒiv

*Misce., s. a.*

Anodyne. Applied on cotton to a carious tooth.

**Guttæ Camphoræ et Chloroformi.**

R	Camphoræ .....	ʒi
	Chloroformi .....	q. s

*Solve.*

Sedative.

**Guttæ Camphoræ et Saponis.**

R	Spiritus Rosmarini .....	ʒi
	Camphoræ .....	ʒi
	Saponis Albæ .....	ʒiv

*Misce.*

Stimulant and alkaline. A few drops on wet tooth brush.

**Guttæ Creasoti et Camphoræ.**

(S. S. W.)

R	Camphoræ .....	gr. xx
	Creasoti .....	ʒi

*Solve.*

Anodyne.

**Guttæ Creasoti et Iodi.**

(s. s. w.)

- R  
 Linimenti Iodi .....  
 Olei Creasoti .....partes æquales

*Misce.*

Stimulant and antiseptic. Changing the pus-producing to a plasma-producing surface.

**Guttæ Creasoti et Morphiae.**

(J. s.)

- R  
 Morphiae Acetatis .....gr. xx  
 Creasoti (vel acidi Carbolici)... 3ii

*Solve.*

Sedative in odontalgia. Applied on cotton and sealed.

**Guttæ Hæmostatici.**

- R  
 Ferri Perchloridi..... ʒss  
 Collodii..... ʒiii

*Salve.*

Astringent.

**Guttæ Tannici.**

(J. s.)

- R  
 Acidi Tannici :..... ʒii  
 Tincturæ Arnicæ..... ʒii  
 Tincturæ Myrrhæ .....ad. ʒi

*Misce.*

Astringent. Useful application to softened and sensitive dentine, also ulcers and abrasions arising from artificial dentures.

**Linimentum Anodynum.**

(K. &amp; W.)

R	Linimenti Aconiti .....	
	Linimenti Belladonnæ .....	aa 3vii
	Chloroformi.....	3ii

*Misce.*

Anodyne. Saturate a piece of lint with this Liniment and apply to the part affected, cover it with a piece of spongio-piline previously soaked in hot water.

**Linimentum Chloroformi.**

(B. F.)

R	Chloroformi .....	
	Linimenti Camphoræ.....	partes æquales

*Misce.*

Nervine.

**Mel Boracis.**

R	Sodæ Biboracis .....	3i
	Mellis .....	3i

*Misce.*

Detergent in Aphtha.

**Mistura Acidi Gallici.**

(T. H.)

R	Acidi Gallici.....	℥i
	Glycerini .....	℥iv
	Aquæ Distillatæ.....ad.	℥vi

*Misce.*

Internal Astringent.—Dose, 1-6th part.

**Mistura Chloralis Hydratis.**

(T. H.)

R	Chloralis Hydratis .....	℥ii
	Syrupi Aurantii Floris .....	℥iv
	Syrupi Tolutani .....	℥iv
	Aquæ Distillatæ.....ad.	℥vi

*Misce.*

Hypnotic—1-6th part for a dose ; to be given largely diluted.

**Mistura Ferri et Acidi Phosphorici.**

R	Ferri Sulphatis .....	gr. xx
	Acidi Phosphorici Diluti .....	℥i
	Aquæ Distillatæ.....ad.	℥vi

*Misce.*

Tonic.—1-6th part for a dose.

**Mistura Ferri e Strychnia.**

R	Ferri Sulphatis .....	gr. xx
	Liquoris Strychniæ .....	3ss
	Acidi Phosphorici Diluti .....	ʒi
	Infusi Quassiae .....	ad. ʒvi

*Misce.*

Tonic and Nervine.—1-6th part for a dose.

**Mistura Guaiaci.**

(B. P.)

R	Pulveris Resinæ Guaiaci .....	
	Sacchari Albi . .....	aa. ʒiv
	Gummi Acaciæ .....	ʒi
	Aquæ Cinnamomi .....	ad. ʒx

*Misce.*In Rheumatic Tooth-ache.—Dose,  $\frac{1}{2}$  to 1 ounce.**Mistura Neuralgica.**

R	Ammoniae Carbonatis.....	3ss
	Ammonii Chloridi .....	ʒii
	Aquæ Menthæ Piperitæ.....	ad. ʒvi

*Misce.*

Alterative and resolvent.—Dose, 1-6th part.

**Mistura Potassii Bromidi.**

(S. S. W.)

R	Potassii Bromidi.....	3ii
	Spiritus Ammoniae Aromatici	3ss
	Misturae Camphorae .....	ad. 3xii

*Misce.*

Resolvent, narcotic and anæsthetic

Dose, 1-12th part, largely diluted with water.

**Mistura Potassæ Chloratis.**

R	Potassæ Chloratis .....	i
	Aquæ Distillatæ.....ad.	3vi

*Misce.*

Refrigerant and diuretic.

Dose, 1-6th part.

**Mistura Potassii Iodi.**

(C. H.)

R	Potassii Iodi.....	3ss
	Potassæ Bicarbonatis .....	5i
	Infusionis Quassiae.....ad.	3vi

*Misce.*

Alterative.

Dose, 1-6th part.

**Mistura Sodæ Hypophosphitis.**

R  
 Sodæ Hypophosphitis .....gr. 60 ad. 1 2  
 Aquæ Distillatæ..... 3xii

*Misce.*

Tonic, alterative, stimulant.

Dose, 1 ounce.

**Pasta Arsenicalis.**

R  
 Acidi Arseniosi (vel Oxidi  
 Arseniosi)..... gr. 20  
 Morphine Acetatis ..... gr. 80  
 Creasoti vel Acidi Carbolicum ... q. s.

*Misce.*

Strong escharotic. Used to produce death of the tooth pulp.

**Pasta Caustica.**

(London Paste.)

(T. H.)

Caustic Soda and unslacked Lime in equal parts.

**Pasta Pepsina.**

(o)

R  
 Pepsinæ Porci ..... q. s.  
 Acidi Hydrochlorici ..... 1 partem  
 Aquæ Distillatæ ..... 40 partes

To be made into a paste and applied to a suppurating pulp.

**Pulvis Aluminis e Amylo.**

(T. M.)

R

Aluminis ..... ..

Amyli ..... partes æquales

*Misce.*

For insufflation.

**Spiritus Acidi Tannici.**

(J. S.)

R

Acidi Tannici ..... ʒi

Alcoholis ..... ʒiv

*Solve.*

For application to softened and sensitive dentine.

**Spiritus Rectificatus Fort.**

(J. S.)

R

Potassæ Carbonatis ..... ʒi

Spiritus Rectificati.....ad. ʒx

*Misce.*

Macerate for a few days, frequently agitating, then pour off the supernatant liquid. This is not so strong as Alcohol, but is a very good substitute.

**Solutio Guttæ Perchæ.**

(J. S.)

R      Guttæ Perchæ (Truman's) ... ʒii vel. q.s.  
       Chloroformi ..... ʒi

*Solve.*

This preparation is useful to paint recent osteo-stoppings during their hardening. Bibulous paper saturated with this preparation forms an excellent capping material for exposed pulps where the "oxy-chloride" stopping is used, protecting it effectually from its escharotic action.

**Tinctura Gelsemini.**

(DR. J. SAWYER.)

R      Radicis Gelsemini Contusæ ... ʒii  
       Spiriti Rectificati ..... ʒxx

Moisten the coarsely powdered root with ten ounces of the spirit, and allow the mixture to stand for 24 hours. At the end of that time pack in a percolator, and add the remaining ten ounces of spirit. When the fluid has ceased to flow, remove the contents of the percolator and press them. Add the pressed liquid to that obtained by percolation, filter, and make up with rectified spirit to a pint.

The tincture contains only a trace of tannin, and may be given with any of the preparations of iron. Nerve sedative.

Dose 10 to 20 minims.

**Vapor Acidi Carbolici.**

(T. H.)

R	Acidi Carbolici .....	3xxi
	Aquæ Distillatæ .....	3iii

**Misce.**

Antiseptic. Very serviceable in syphilitic ulceration and carcinoma.

*For steam inhalation.*—A teaspoonful in a pint of water at 150 ° F for each inhalation.

*For hot dry inhalation.*—A teaspoonful to be poured into the apparatus for dry inhalation, and the vapour inhaled.

*For cold inhalation.*—A teaspoonful in a pint of water at 80 ° F. to 100 ° F.

**Vapor Amyl Nitritis.**

(T. H.)

R	Amyl Nitritis .....	m. xxiv
	Spiritus Rectificati .....	3iii

**Misce.**

Antispasmodic. Very valuable in some cases of Asthma, and Spasm of the Glottis.

A teaspoonful in a pint of water at 100 ° F. for each inhalation. Dry inhalation produces giddiness, &c.

ANTIDOTE.—The *Canadian Journal of Pharmacy* states that hypo-nitrous ether has been suggested by Dr. Squibb as an antidote in poisoning by nitrite of amyl.

**Vapor Thymolis.**

(Т. Н.)

R	Thymolis Hydratis.....gr. xx
	Spiritus Rectificati ..... ʒiii
	Magnesiae Carbonatis.....gr. x
	Aquæ Distillatæ.....ad. ʒiii

**Misce.**

A strong stimulant. Very useful in chronic glandular pharyngitis and Laryngitis.

A teaspoonful in a pint of water at 150 ° F. for each inhalation.



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